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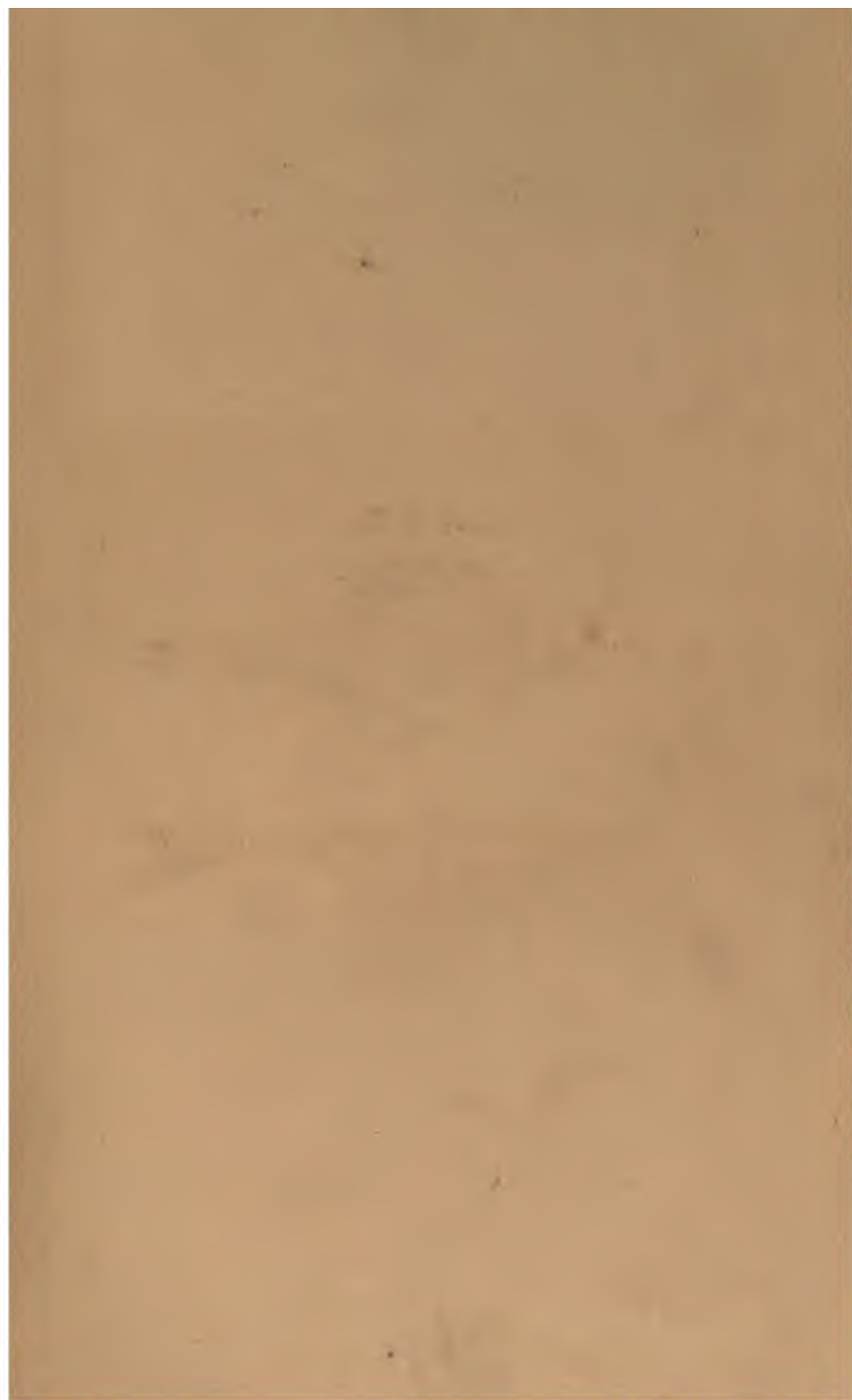
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# DISEASES OF THE SKIN

AND THE

## ERUPTIVE FEVERS

BY

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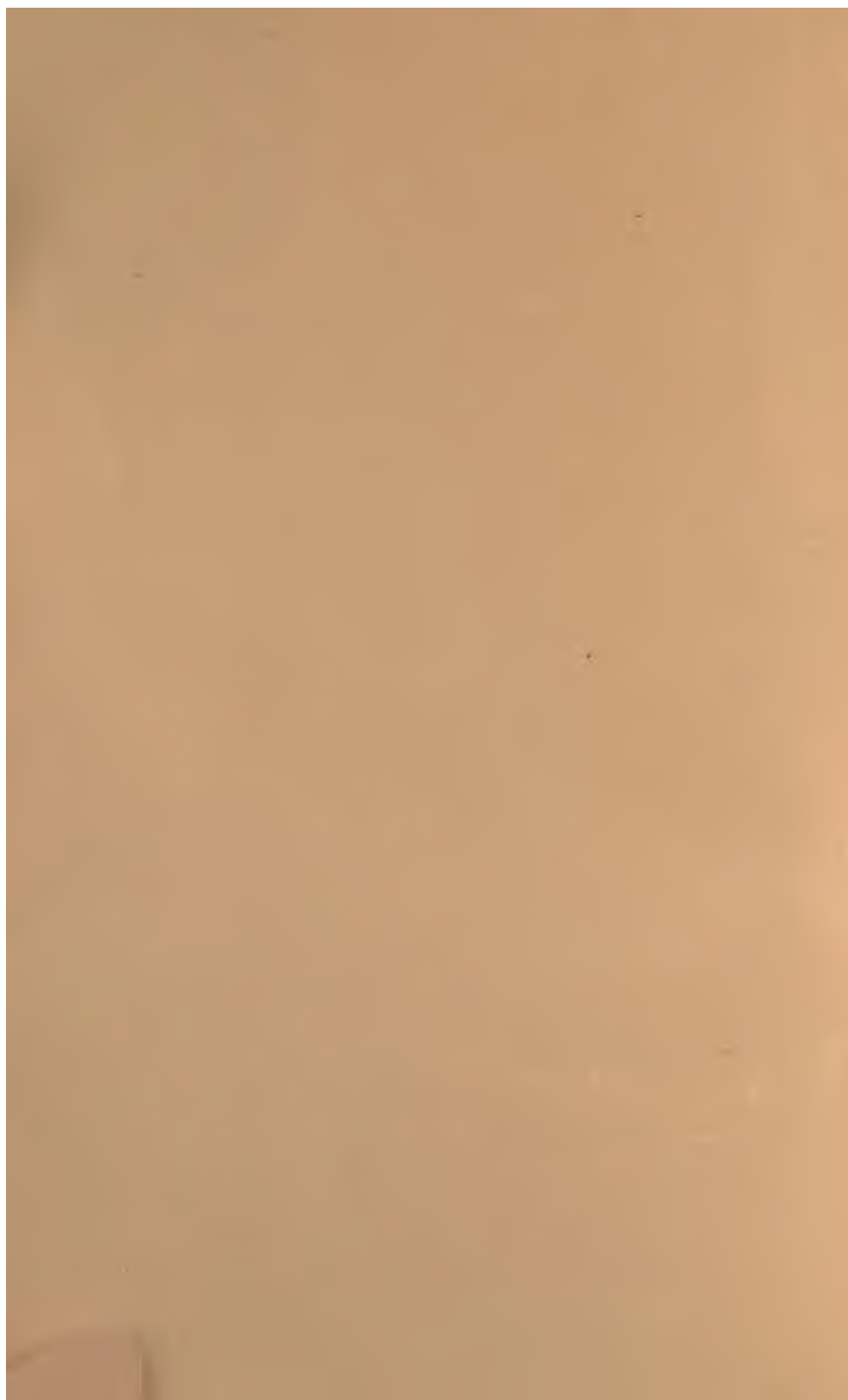
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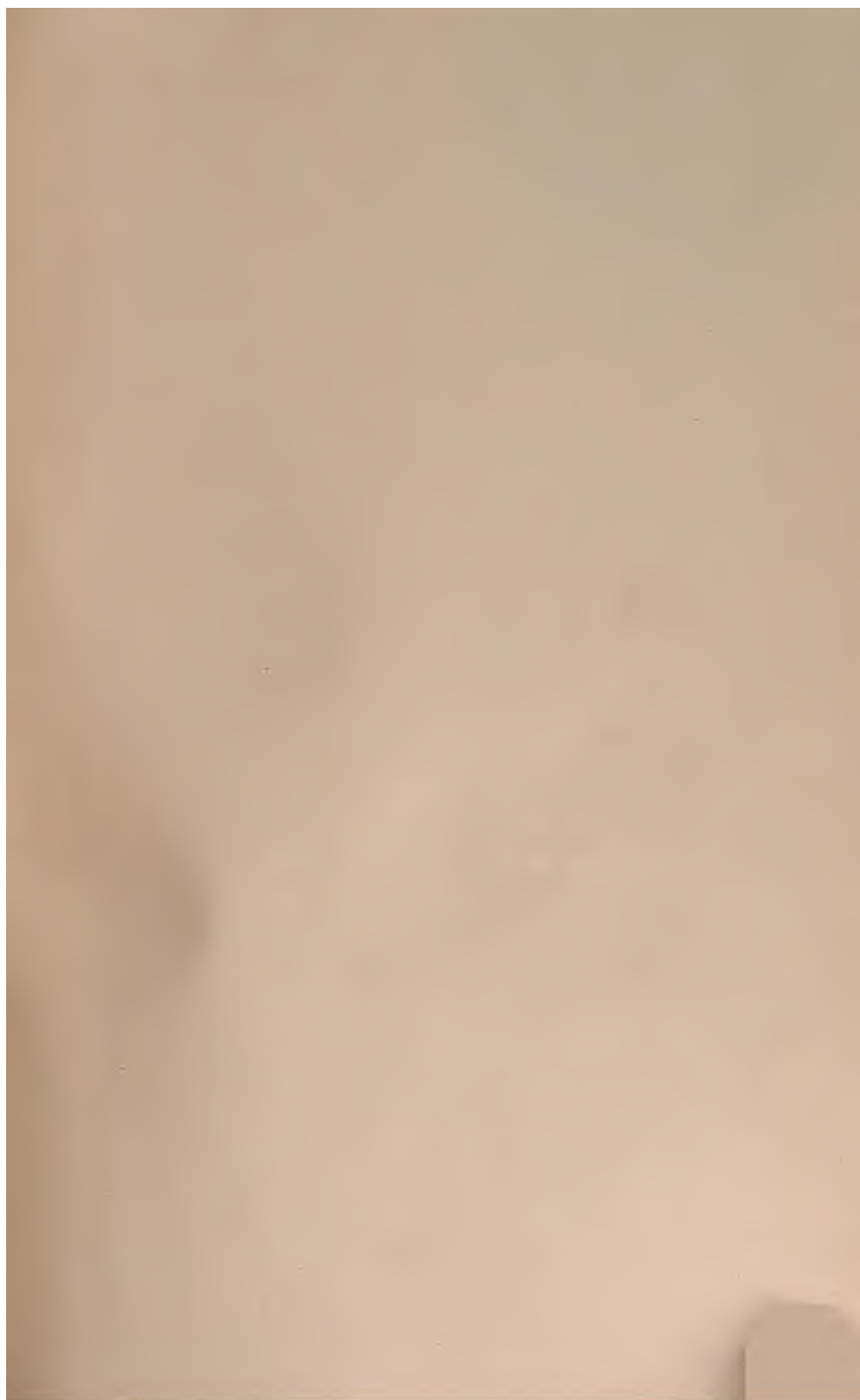
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## PREFACE

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THE study of dermatology in its broadest sense embraces the consideration of all morbid processes that are characterized by cutaneous manifestations. This conception of the subject, which follows that of the old Vienna school, lends to dermatology greater dignity and gives to it a more important mission. The specialist in diseases of the skin should be skilled in the diagnosis not only of the ordinary dermatoses, but of the rashes of the various eruptive fevers. The two classes of affections frequently resemble each other to such a degree as to require for their differentiation a broad experience in both. The striking manner in which syphilis may simulate small-pox is well known. The eruption of syphilis is, properly considered, no more entitled to be included among skin diseases than is that of small-pox; the former constitutes the most conspicuous symptom of a chronic infectious process, while the exanthem of variola represents the most striking feature of an acute infectious process.

In the present volume the exanthemata are treated in a separate chapter, and, owing to the importance attaching to their diagnosis, are given greater space than is usually accorded to them in books on skin diseases. The general symptoms are described briefly, but all that relates to the skin manifestations is exhaustively treated. In addition to a consideration of the diseases ordinarily included among the exanthemata, there are described the usual and the accidental eruptions occurring in the course of such diseases as typhoid fever, typhus fever, epidemic cerebrospinal meningitis, influenza, malaria, rheumatic fever, dengue, miliary fever, angina, and tonsillitis. Space does not permit of the description of the general symptoms of these diseases, but merely of the eruptive phenomena.

The part devoted to diseases of the skin is designed to present the subject in a brief and practical manner: special attention is devoted to symptomatology, diagnosis, and treat-



ment. It is hoped that the numerous photographic illustrations will helpfully supplement the text.

The author has availed himself of the privilege of consulting the well-known treatises on dermatology of Kaposi, Brocq, Duh-ring, Hyde and Montgomery, Stelwagon, and others.

The author has freely abstracted from the chapters written by him in Welch and Schamberg's "Acute Contagious Diseases," and has drawn upon the illustrations therein contained, and acknowledgment of the courtesy extended by Lea and Febiger, the publishers of this work, is gratefully made. The author likewise acknowledges his obligation to P. Blakiston's Son and Company for the granting of similar privileges with reference to his "Compend of Skin Diseases."

In conclusion, the author wishes to express his appreciation of the unfailing courtesy and helpful coöperation of the publishers, the W. B. Saunders Company.

J. F. S.

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# DISEASES OF THE SKIN

AND

## ERUPTIVE FEVERS

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### DISEASES OF THE SKIN

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#### ANATOMY AND PHYSIOLOGY

##### EMBRYONIC DEVELOPMENT OF THE SKIN

EMBRYOLOGICALLY speaking, but two layers of the skin are recognized—the epidermis and the corium.

The *corium* represents the foundation of the skin, and is derived from the superficial layer of the mesoderm, called the “skin-plate.” At the end of the fourth week the cutis is made up of embryonic corpuscles, which develop into spindle-shaped protoplasmic bodies of a fibromyxomatous nature between the second and third month. About the fifth month the myxomatous tissue is replaced by a collagenous basic substance. Blood-vessels are first formed about the third month.

The *epidermis* is a distinct layer, having its origin in the ectoderm. It is represented at the end of the first month by a single layer of epithelial cells upon the surface of the body. From the fifth to the eighth month the mucous layer takes on great activity and, through cellular growth, forms the cutaneous glands and hair.

##### ANATOMY OF THE SKIN

The skin may be said to be composed of three distinct layers: the epidermis, the corium, and the subcutaneous tissue.

The **epidermis**, or **cuticle**, consists of four layers: (a) Stratum corneum; (b) stratum lucidum; (c) stratum granu-





to four rows of bright, transparent, homogeneous, elongated cells. This layer is of minor importance, and is considered by many the basal layer of the stratum corneum.

(c) The *stratum granulosum* (granular layer) is made up of several rows of flattened granular cells. These granules contain a substance called keratohyalin. An allied substance, eleidin, is also present. The granular layer may be regarded as the superficial stratum of the mucous layer.

(d) The *stratum mucosum* (mucous layer, rete Malpighii) is the deepest and most important layer of the epidermis. The basal layer consists of columnar epithelial cells (sometimes spoken of as the palisade layer), which contain the skin-pigment. These cells lie in contact with the papillæ of the corium. Above the columnar layer are irregular layers of polygonal nucleated cells with serrated borders (prickle-cells). As the granular layer is approached, the cells become more fusiform in shape and exhibit a stratified arrangement. There are no blood-vessels in the epidermis, but there exist intercellular spaces which contain a nutrient fluid.

The **corium** (derma, cutis vera, or true skin) is a dense, thick structure made up of white fibrous tissue interspersed here and there with yellow elastic tissue. It contains blood-vessels, nerves, lymphatics, nerve-corpuscles, hair, sweat- and sebaceous glands, muscle- and fat-cells. It consists of two layers: (a) *pars papillaris* (papillary layer); (b) *pars reticularis* (reticular layer).

(a) The *papillary layer* is made up of finger-like prominences which dovetail into the rete prolongations. The papillæ are supplied with blood-vessels, ~~nerves~~ lymphatics, and nerve-

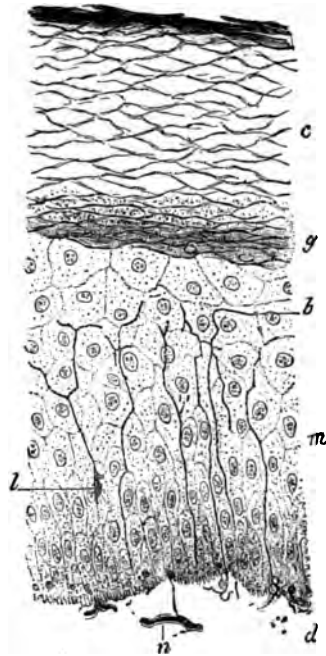


Fig. 2.—The epidermis: c, Corneous (horny) layer; g, granular layer; m, mucous layer (rete Malpighii); the stratum lucidum is the layer just above the granular layer; d, corium. Nerve terminations: n, Afferent nerve; b, terminal nerve-bulbs; l, cell of Langerhans (Ranvier).

corpuscles. According to Sappey, there are 100 papillæ to the square millimeter; it is estimated that the entire cutaneous surface contains about 150,000,000 papillæ. There are two kinds of papillæ, "vascular" and "sensory." The former are richly supplied with blood-vessels, while the latter are poor in vascular tissue, but contain medullated nerves and connective tissue.

(b) The *reticular layer* is made up of loosely arranged bundles of connective tissue. This layer merges into the papillary layer without a line of demarcation. It differs from the papillary layer in the arrangement of the connective-tissue fibers.

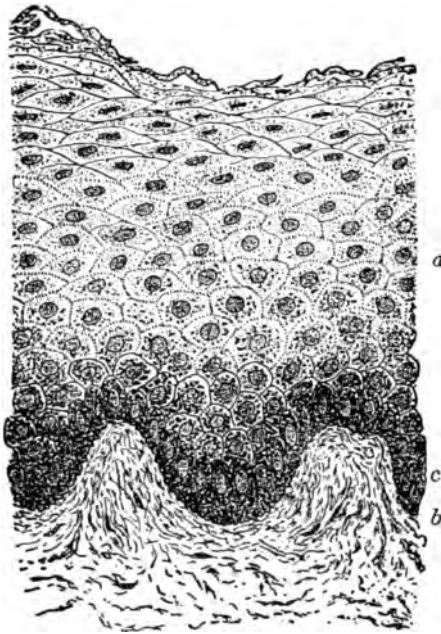


Fig. 3.—Section of negro skin, including epidermis (a) and papillary layer (b) of the corium. The pigment is contained in the deepest layer (c) of the epidermis (Piersol).

The **subcutaneous tissue** (stratum subcutaneum) is made up of a loosely arranged network of connective tissue between the meshes of which are contained fat-globules (panniculus adiposus). The deeper hair-follicles and sweat-glands also find lodgment in this layer.

**Blood-vessels.**—Two horizontal plexuses exist in the skin—a superficial and a deep one. The former occupies the papillary layer; the latter, the subcutaneous tissue. The deep plexus sends branches to the sweat- and sebaceous glands and to the hair-follicles. The superficial plexus sends vessels to the

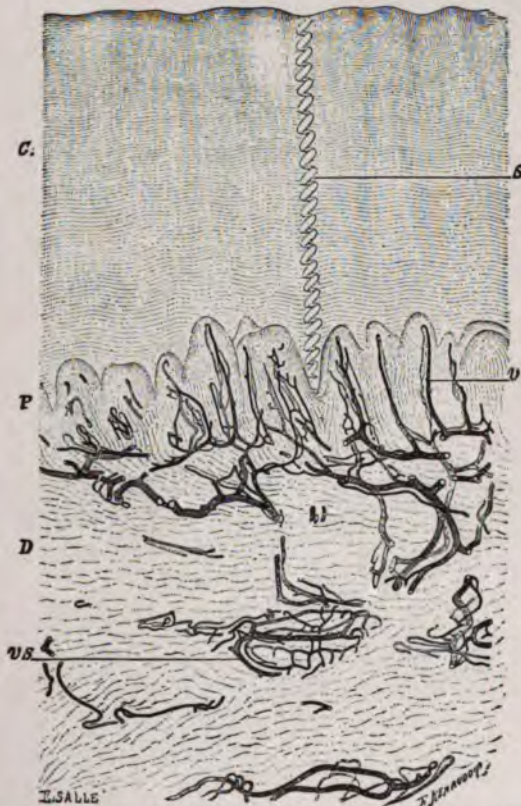


Fig. 4.—The blood-vessels: C, Epidermis; D, corium; P, papillæ; S, sweat-gland duct; v, arterial and venous capillaries (superficial or papillary plexus) of the papillæ; deep plexus is partly shown at lower margin of the diagram; vs, an intermediate plexus, an outgrowth from the deep plexus, supplying sweat-glands and giving a loop to hair-papilla (Ranvier).

papillæ, where capillary loops are formed. The arteries are small compared with the size of the veins.

**Lymph-vessels.**—There appear to be also superficial and deep lymph-plexuses in the skin, following in a general way the

blood-vessels. Juice-spaces filled with lymph occur at all levels in the corium. Lymph reaches the epidermis through the apices of the papillæ.

**Nerves.**—The skin contains both medullated and non-medullated nerve-fibers. When the former end in the subcutaneous connective tissue, they terminate in Pacinian corpuscles; when they end in the papillæ of the skin, they form tactile corpuscles. The non-medullated fibers penetrate the corium and are lost in the mucous layer of the epidermis. The skin also contains motor and vasomotor nerves.

*Nerve-corpuscles.*—(a) The *corpuscles of Krause* (bulb-corpuscles) are found chiefly in the sensory mucous membranes—most abundantly in the conjunctiva. They are round or elongated bodies, and resemble the Pacinian corpuscles.

(b) The *tactile corpuscles* (touch-corpuscle, corpuscle of Meissner) are found in the skin papillæ—most abundantly in the fingers. They are round or oval fibrous masses with a striated covering.

(c) The *Pacinian corpuscles* are most numerous in the skin of the fingers and toes. They lie, for the greater part, in the subcutaneous tissue. They are oval bodies made up of a "central nerve-fiber," a "core" or surrounding substance, and a "capsular covering," which has many concentric layers.

**Muscles.**—Both voluntary and involuntary muscle-fibers occur in the skin. Striated muscle is found in the skin of the face. Smooth muscle exists in the scrotum and in connection with hair-follicles. The contraction of the hair-muscle causes the hair to rise, and also expresses sebum from the sebaceous glands.

**Sebaceous glands** are racemose or acinous glands situated in the corium, chiefly in relation with the hair-follicles. They may, however, occur independently of them, as upon the border of the lip, penis, etc. They consist of one or more pouches which empty into a common duct. Sebum consists of fatty degenerated cells mixed with epithelial débris.

**Sweat-glands** are simple tubular glands which lie in coils in the deeper layers of the corium and in the subcutaneous tissue. They empty into excretory ducts, which traverse the corium, penetrate the epidermis between the papillæ, and then pursue a spiral course to the surface of the skin. They are most abundant in the palms and soles. Sappey estimates that there are 2,000,000 sweat-glands in the skin.



**Hair.**—Hair is nothing more than a specialized epidermal tissue. The corium and epidermis are somewhat modified in structural arrangement to accommodate the hair. This modification gives rise to the hair-follicle. Hair-follicles are slender, cylindric pockets, which dip down into the corium and the subcutaneous tissue.

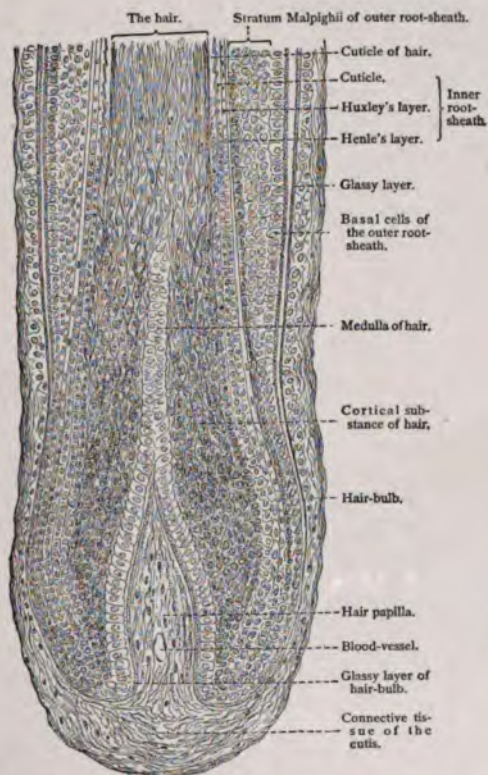


Fig. 5.—Longitudinal section of human hair and its follicle ( $\times$  about 200) (Böhm and Davidoff).

The outer or dermic coat of the follicle consists of three layers: an external longitudinal fibrous layer, a middle transverse layer, and an internal homogeneous or vitreous layer.

The internal or epidermic coat (outer root-sheath of some authors; prickle-cell layer) is a continuous layer of the epidermis.

The root-sheath proper (inner root-sheath of some authors) is composed of two layers—an external layer (layer of Henle) and an internal layer (layer of Huxley).

The cuticle of the root-sheath is a thin layer of cells lying internal to the root-sheath.

From without inward, then, the coats of the follicle are: (a) Dermic coat, three layers. (b) Epidermic coat (outer root-sheath; prickle-cell layer). (c) Root-sheath proper (inner root-sheath)—layer of Henle; layer of Huxley. (d) Cuticle of the root-sheath.

The skin outlet of the follicle is called the mouth. The neck corresponds to the constriction near the entrance of the sebaceous duct. The bulb is the dilated lower end of the follicle.

The hair itself consists of a cortex or cortical substance which constitutes the bulk of the hair, the medulla, which lies in the

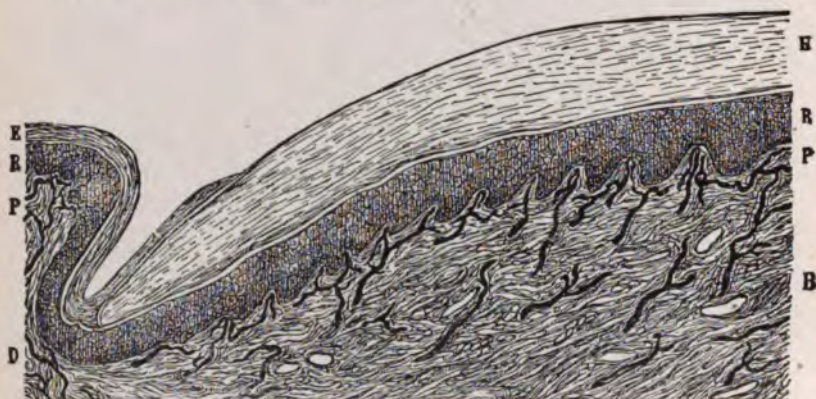


Fig. 6.—Nail (longitudinal section,  $\times 100$ ): *H*, Nail-plate corresponding to horny layers; *R, R*, rete mucosum; *P, P*, papillary layer; *B*, bed of nail; *E*, epidermis; *D*, derma with injected blood-vessels (L. Heitzmann).

medullary canal, and the cuticle, a thin membrane covering the hair. The portion of the hair outside the skin is called the shaft, that in the skin, the root, the nether termination of which constitutes the bulb; the concavity of the bulb fits over the papilla, through which the nourishment of the hair is supplied.

Hair consists of a nitrogenous substance containing sulphur, fat, pigment, and mineral salts. Von Laer gives the following analysis: Carbon, 47 per cent.; oxygen, 25 per cent.; nitrogen, 17 per cent.; hydrogen, 6 per cent., and sulphur, 5 per cent.

Hair is one of the last tissues of the body to undergo decomposition.

**Nail.**—The nail, like the hair, is a specialized epidermal structure. It is composed of two layers—the mucous or soft layer, and the horny, which constitutes the nail proper.

The nail-bed is the tissue covered by the nail. The posterior end of this is the matrix from which the nail grows. The exposed portion of the nail is termed the body. The posterior portion embedded in the groove is the root. The nail-groove is the groove extending around the proximal portion of the nail. From this springs the nail-fold. The thin skin that often becomes adherent to the nail is called the nail-skin or eponychium. The whitish crescent on the nail is the lunula, and is due to a lessened translucency of that portion. Accidental white spots on the nails are alleged to be due to the presence of air between the lamellæ.

## PHYSIOLOGY OF THE SKIN

It has been seen that the skin is made up of a complex structural architecture. It must be regarded not merely as the protective covering of the body, but as an important organ whose proper functioning is essential to health and life.

The skin exercises the following functions: protection to subjacent tissues, heat-regulation, tactile and thermal sensation, respiration, secretion, and elimination.

The several layers of the skin, but particularly the corium, act as a *protective* barrier against injuries to the underlying structures. The horny cells are made up largely of keratin, a resistant substance indestructible by strong mineral acids, and indigestible in hydrochloric acid and pepsin. It is a protein containing considerable sulphur, and one-third of its ash is said to be composed of silicates. The *heat-regulating* function of the skin is largely exercised through the condition of the cutaneous blood-vessels which influence perspiration and also radiation and conduction of heat from the body surface. The skin contains the nerve elements through which *tactile and thermal sensations* are appreciated. The *respiratory function* of the skin is slight and unimportant as compared with the lungs. Oxygen is absorbed and carbonic acid is given off. It is estimated that between four and ten grains of carbonic acid are given off from the skin in the course of twenty-four hours



The secretory function of the skin is carried on by the sweat- and sebaceous glands, whose products tend to lubricate and to soften the integument. One of the most important functions of the skin is that of *elimination*, which takes place through the activity of the sweat-glands. Effete and noxious products are in this manner removed from the body. Under normal conditions an adult will lose two pounds of sweat daily. There is a complementary relation between the activity of the sweat-glands and the kidneys; increased elimination of fluids through one organ is accompanied by a corresponding decrease through the other.

Charles, from a compilation of several analyses, gives the following composition of sweat:

|  | Per cent.    |
|--|--------------|
| Water.....   | 98.8         |
| Solids.....  | 1.12         |
| Salts.....   | 0.57         |
| Sodium chlorid.....  | 0.22 to 0.33 |
| Alkaline sulphates, phosphates, lactates, and potassium chlorid..... | 0.18         |
| Fats, fatty acids, and cholesterol.....                              | 0.41         |
| Epithelium.....  | 0.17         |
| Urea.....  | 0.08         |

Sweat is colorless, has a salty taste, acid reaction, and a specific gravity of 1001 to 1010.

It is believed that a transudation of water through the skin may take place independently of elimination through the sweat-glands.

## SYMPTOMATOLOGY

### OBJECTIVE SYMPTOMS

It is essential for the student of dermatology to recognize the character of the eruptive elements of diseases of the skin, for these are of great importance in diagnosis.

Lesions upon the skin may be *primary* or *secondary*. The primary lesions constitute the initial manifestations upon the skin. The secondary lesions result from either natural or accidental modification of the primary lesions.

The primary lesions consist of macules, papules, vesicles, blebs, pustules, tubercles, wheals, and tumors.

*Maculae* (macules) are circumscribed, discolored patches of skin of variable shape and size, without elevation or depression.

*Papulae* (papules) are circumscribed, solid elevations of the skin, varying in size from a pin-head to a pea.

*Vesiculae* (vesicles) are pin-head- to pea-sized circumscribed elevations of the epidermis, containing clear or opaque fluid.

*Bullae* (blebs) are round or irregularly shaped pea- to egg-sized elevations of the epidermis, containing clear or opaque fluid.

*Pustulae* (pustules) are circumscribed flat or acuminate elevations of the epidermis, containing pus.

*Pomphi* (wheals) are edematous, circumscribed, irregular pinkish or whitish elevations of the skin, transitory in character.

*Tubercula* (tubercles) are circumscribed, solid, deep-seated elevations of the skin attaining or surpassing the size of a pea.

*Tumores* (tumors) are variously sized and shaped prominences, having their seat in the corium or subcutaneous tissue.

The secondary lesions comprise scales, crusts, excoriations, fissures, ulcers, scars, and stains.

*Squamæ* (scales) are dry epidermal exfoliations shed from the surface of the skin.

*Crustæ* (crusts) are brownish or yellowish masses of dried exudation.

*Excoriationes* (excoriations) are epidermal denudations, usually the result of local traumatism.

*Rhagades* (fissures) are linear cracks or wounds in the epidermis or corium due to disease or injury.

*Ulcera* (ulcers) are round or irregular losses of tissue involving the skin and subcutaneous tissue.

*Cicatrices* (scars) are connective-tissue new-formations occupying the region of former losses of tissue.

*Pigmentationes* (stains) are discolorations of the skin left after the disappearance of cutaneous lesions.

### SUBJECTIVE SYMPTOMS

Among the subjective phenomena occurring in skin diseases may be mentioned sense of heat, burning, itching, smarting, tingling, tenderness, and pain. These are present in the different diseases in varying degrees of intensity.

Tenderness and pain are usually encountered in phlegmonous conditions and in malignant neoplasms. The other phenomena are chiefly present in the inflammatory dermatoses.

## CLASS I. ANAEMIAE—ANEMIAS

Some writers do not class skin pallor in the category of cutaneous affections. It is true that anemia is usually the expression of a systemic disturbance; nevertheless, local forms of anemia of the skin are a part of the symptomatology of certain cutaneous diseases below referred to.

*Anemia of the skin* is characterized by a reduction in the quantity or a change in the quality of the blood in the integument. It may be transient or persistent.

*Transient anemia* occurs after hemorrhages, during certain nervous states, such as fear, anger, in shock, fainting, etc., and as a result of vasomotor disturbances.

*Persistent anemia* occurs in connection with the various essential anemias and cachexias. It occurs, moreover, in morphea, scleroderma, alopecia areata, and Raynaud's disease, as a result of trophic and vascular disturbances.

Local anemias, from faulty innervation, and the chronic anemias may lead to the development of seborrhea, comedo, acne, and acne rosacea.

## CLASS II. HYPERAEMIAE—HYPEREMIAS

In this class are included those diseases which are characterized by an overfilled state of the blood-vessels of the integument, unattended by inflammation. As Crocker remarks, the distinction between congestion and inflammation, or between a congestive erythema and an inflammatory erythema, is often one of clinical convenience rather than pathologic accuracy.

Hyperemias may be *active* or *passive*. Each form may be further subdivided into idiopathic and symptomatic hyperemia.

*Idiopathic active hyperemia* includes forms of erythema due to the action of local irritants. These substances may produce an evanescent redness without leading to inflammation.

*Symptomatic active hyperemia* is due to visceral or nervous disturbances. Flushing and blushing are examples of this form. Flushing is a congestion resulting usually from reflex stimulation. Blushing is of psychic origin, and necessitates self-thought. Darwin says: "blushing is the most peculiar and the most human of all expressions," for none of the lower animals blush.

*Idiopathic passive hyperemia* is characterized by blueness of the skin or livedo. It may be caused by exposure to cold or

heat, chemic substances, continued pressure, contusions, and circulatory obstructions resulting from bandages, ligatures, articles of dress, etc.

*Symptomatic passive hyperemia* results from some general disturbance of the cardiac, circulatory, or respiratory system. It is characterized by blueness of the skin, a condition which is designated *cyanosis*.

### ERYTHEMA HYPERAEMICUM

*Derivation.*—'Ερίθημα, a blush. *Synonyms.*—Erythema simplex; Erythema congestivum.

**Definition.**—Erythema hyperæmicum is a congestive disorder of the skin characterized by non-elevated patches of redness of variable size and shape.

**Symptoms.**—Redness is the essential characteristic of the disease. It may be a bright or a dull red, but always disappears under pressure. Infiltration and elevation are absent. Mild burning and itching are usually present.

**Etiology.**—Erythema hyperæmicum may be due to external or local causes and internal causes. When not arising from local causes, it is due to a toxemia of one character or another. Among the local causes may be mentioned heat, cold, traumatism, poisons, etc.

*Erythema caloricum* is a redness produced by exposure to either extremely high or low temperatures. When the redness results from the influence of the chemically active rays of the sun, it is termed *erythema solare*.

*Erythema ab igne* is a condition due to the exposure of the skin to artificial heat. It occurs chiefly in cooks, stokers, kitchen employees, and those who acquire the habit of toasting their legs at the fire. In this affection annular and gyrate patches are seen, particularly upon the anterior surface of the legs. The patches disappear upon the cessation of the causative influence.

*Erythema traumaticum* results from various cutaneous injuries, such as friction, pressure, rubbing, etc. This is seen in the pressure of nose-glasses, trusses, and like articles.

*Erythema venenatum* is a name given to transient hyperemias due to the action of drugs, such as arnica, mustard, chloroform, etc.

Many descriptive adjectives have been employed to designate

minor forms of erythema of diverse origin. *Erythema læve* is a term formerly employed to designate the shining, tense redness seen on edematous members. *Erythema fugax* is a transitory redness of a patchy nature allied to urticaria. *Erythema paratrimma* is an obsolete term applied to redness over bony prominences.

The internal or toxemic erythemata are exemplified in the stomach rashes of children, in intestinal autointoxication, after the use of various antitoxins, etc.

**Treatment.**—If the erythema is due to a toxemia, it is evident that treatment must be directed toward this condition.

A saline purge will promptly relieve an erythema due to the absorption of ptomains or other poisons from the intestinal canal.

Stomach rashes in children will nearly always yield to fractional doses of calomel.

The local treatment consists of the use of dusting-powders or cooling lotions. The following may be employed:

|                          |                   |
|--------------------------|-------------------|
| R. Acidi carbolici ..... | ℥xxx;             |
| Acidi borici .....       | ʒj;               |
| Glycerini .....          | fʒij;             |
| Pulv. zinci oxidi .....  | ʒj;               |
| Aquæ .....               | q. s. ad fʒvj.—M. |

### ERYTHEMA INTERTRIGO

Erythema intertrigo (chafing) is a form of traumatic erythema occurring chiefly in those regions where skin surfaces are in apposition, such as the genitals, flexures of joints, neck, etc. It is common in children and fat individuals. Moist diapers and the contact of intestinal discharges are often causative. The condition may remain as an erythema or may develop into dermatitis or an eczema. It is then characterized by redness, excoriation, and a mucoid discharge. There is usually a feeling of heat and soreness.

**Treatment.**—When the condition remains as a true erythema, dusting-powders suffice to effect a cure. Such a combination as the following answers well:

|                       |        |
|-----------------------|--------|
| R. Acidi borici ..... | ʒj;    |
| Zinci stearat. ....   | ʒij;   |
| Talci Venet. ....     | ʒj.—M. |
| Sig.—Dusting-powder.  |        |

Or a lotion may be employed, such as:

|                       |          |             |
|-----------------------|----------|-------------|
| R. Resorcin.          | }        | .....āā ʒj; |
| Acidi borici          |          |             |
| Glycerini             |          |             |
| Aquæ hamamelidis..... |          | fʒj;        |
| Zinci oxidi.....      |          | ʒij;        |
| Aquæ .....            | q. s. ad | fʒvj.—M.    |

If an eczema or a dermatitis supervene, the condition should be treated according to the principles laid down in the treatment of those affections.

### CLASS III. EXSUDATIONES—INFLAMMATIONS

#### ERYTHEMA EXSUDATIVUM

As has been remarked, the line of demarcation between a congestive erythema and an inflammatory or exudative erythema cannot always be discerned; nevertheless, the separation of these groups is convenient for didactic purposes. Erythema exsudativum comprises a group of diseases characterized by an acute, short course, multiformity of lesions, as a rule, and tendency to recurrence. In this group are to be included erythema multiforme, erythema nodosum, erythema scarlatinoides, the exanthems of the acute eruptive fevers, and the various accidental rashes accompanying such diseases as septicemia, Bright's disease, etc.

#### ERYTHEMA MULTIFORME

*Synonym.*—Erythema exsudativum multiforme.

**Definition.**—Erythema multiforme is an inflammatory disease characterized by variously sized and shaped patches of erythema, papules, vesicles, or blebs, one type of lesion, as a rule, predominating. The disease runs an acute course and is occasionally accompanied by constitutional disturbance of mild degree.

**Symptoms.**—The disease is preceded or accompanied, in a certain proportion of cases, by mild febrile disturbances, malaise, and rheumatoid pains. The eruption, which comes out more or less suddenly, may consist of macules, maculopapules, papules, tubercles, vesicles, blebs, or at times hemor-

rhages, one type of lesion, as a rule, predominating. Any part of the body may be involved, although the disease exhibits a pronounced predilection for the extensor surfaces of the hands, feet, legs, and arms. The face and neck not infrequently are attacked. At times the mucous surfaces of the eyelids, nose, mouth, and throat become involved. I recall a young colored man in whom, in five periodic attacks, the mucous surfaces mentioned and the hands were the seat of an extensive bullous outbreak. The lesions are at first pinkish or bright red, but later acquire a characteristic bluish-red or violaceous tint.

According as one or another type of lesion predominates, different designations are employed. The commonest form (*erythema papulatum*) is characterized by pin-head- to split-pea-sized, obtuse papules. At times the lesions are maculo-



Fig. 7.—Erythema multiforme of three days' duration.

papular, with clear centers producing ring-shaped patches (*erythema annulare* or *erythema circinatum*). It is not rare to see small, ring-shaped patches of a bluish-red color with a slight central crusting representing an abortive vesicle. When nodules or tubercles are present, the type is called *erythema tuberculatum*.

*Erythema marginatum* is that variety characterized by patches of erythema with sharply defined borders and central fading of the redness. Concentric rings of varying coloration, from purple to pink, constitute the type called *erythema iris*.

*Erythema* or *herpes iris* was formerly regarded as a separate affection; it is now generally recognized as one of the varieties of erythema multiforme. In this form, instead of the concentric erythematous rings seen in erythema iris, concentric rings made up of vesicles or blebs occur. Upon the reddened areola surrounding a papule or vesicle a circle of vesicles develops; beyond this a second ring of vesicles may appear, and later a third, or even a fourth. Wilson saw a case in which seven distinct circles were present. The central portions



Fig. 8.—Erythema multiforme: papular and vesicular lesions. Punctiform central crusting. Duration, three days. Eruption present also on neck and ears.

undergo involution as the patch spreads upon the periphery. As a result, gradations of color are noted—from a central purple to a vivid redness upon the periphery—thus giving rise to the name *iris*.

Mention might here be made of a rare affection called *erythema perstans*, although it is not proved that it is a variety of erythema multiforme. In this condition patches of erythema, usually assuming a circinate or gyrate configuration, are present, and persist without much change for a period of months.

Various types of lesions are seen in some cases of erythema



multiforme; it is not rare to note a papular eruption upon the hands, with a tendency to vesiculation upon the ears and neck. The *subjective* symptoms are rarely troublesome, except in those cases in which an urticarial element is present, when burning and itching may be quite severe.

Osler has recently published several interesting communications upon the visceral manifestations associated with erythema multiforme. In many of these cases he regards the cutaneous



Fig. 9.—Erythema perstans; duration, five months. Present only on the thighs and buttocks. Cured by a chrysarobin ointment. Microscopic examination negative.

eruptions as merely conspicuous manifestations of an internal disorder. He has observed alarming symptoms referable in different cases to the gastro-intestinal tract, kidneys, brain, lungs, or joints. The same cause may produce in a patient an erythema multiforme at one time, and during a subsequent attack urticaria, angioneurotic edema, or purpura. There is unquestionably a close family relation between these various cutaneous manifestations.

We occasionally observe patients who suffer from *recurrent* attacks of erythema multiforme. In some instances there may be periodic outbreaks at regular intervals.

The duration of erythema multiforme is ordinarily between ten days and four weeks.

**Etiology.**—The disorder occurs most frequently in youth and early adult life. Most cases are observed in spring and autumn.

Many authors allege a relationship between erythema multiforme and rheumatism. It appears that the evidence is very slight upon which to base the assumption that the associated joint pains are true rheumatism. Articular pains and swellings are not uncommon in connection with the eruptions (of the erythema multiforme group) that follow the use of antitoxic sera, and in these, true rheumatic complications cannot possibly be suggested.

In a general way it may be said that all or nearly all cases of erythema multiforme are due to the circulation in the blood of a poison; the poison may be introduced from without, or it may be generated within the body (autotoxic). Among the poisons from without may be mentioned drugs, food-stuffs, accidental microbic infection, etc. Quinin, arsenic, belladonna, salicylic acid, etc., are known to have caused erythemata of the multiform variety. Ptomaines, introduced in certain food-stuffs, are often responsible for outbreaks of this affection. Tissue poisons, generated in the various viscera and due to functional or organic disease, are probably much more commonly causative than has been thought.

**Pathology.**—The toxins or poisons above referred to, no matter what their nature or origin, circulate in the blood and act upon nerve-centers and perhaps also upon the blood-vessels, and cause the various clinical phenomena. The affection is regarded by many as an angioneurosis.

Microscopic examination of the skin reveals nothing distinctive of the disease. The affection, according to the type examined, exhibits hyperemia of the cutaneous blood-vessels, cell-exudation into the corium and subcutaneous tissue, and, at times, transudation of serum, producing vesicles, blebs, or edema.

**Diagnosis.**—Erythema multiforme may be distinguished from *urticaria* by the greater persistence of the lesions, the occurrence of bluish-red papules, the predilection for certain regions, the absence of distinct wheals, and the very moderate grade of the subjective symptoms.

Measles and rubella may be simulated at times, but should be readily differentiated.

Bullous erythema must be distinguished from dermatitis herpetiformis and pemphigus.

**Prognosis.**—The prognosis is nearly always favorable, the eruption disappearing in from one to four weeks. Periodic recurrences are not rare. When the eruption is the expression of some serious underlying systemic disturbance, the latter condition may lend gravity to the disease.

**Treatment.**—Erythema multiforme is a self-limited affection, the eruption disappearing in one to several weeks in the vast majority of cases. As the disease is nearly always due to a poison introduced from without or elaborated within the system, stimulation of the various emunctories is desirable. When intestinal autoinfection is suspected, calomel should be administered and followed by a saline purge. Many authors advise the use of such intestinal antiseptics as salol, phenacetin, etc. Calomel, by promoting a flow of bile into the intestines, appears to be a superior antiseptic.

Every effort should be made to determine the cause of recurrent attacks, with a view to preventing them. The nature of these will often be found to be obscure and their prevention difficult.

Local treatment is of but little importance, and is confined to the use of sedative and antipruritic lotions. The following will be found useful:

|                    |                 |
|--------------------|-----------------|
| R. Resorcin.       | 3j;             |
| Acidi borici       | 3j;             |
| Glycerini          | f3j;            |
| Zinci oxidi        | 3j;             |
| Spirit. vini rect. | f3j;            |
| Aquæ               | q. s. ad f3j.—M |

Sig.—Apply frequently.

### ERYTHEMA NODOSUM

*Synonym.*—Dermatitis contusiformis.

**Definition.**—Erythema nodosum is an acute inflammatory disease of the skin, characterized by the formation of roundish or oval node-like swellings occupying chiefly the tibial regions. This affection is classified by some authors as a variety of erythema multiforme.

**Symptoms.**—The disease is usually ushered in with fever, articular pains, malaise, and coated tongue. Soon roundish or oval node-like swellings, varying in size from a hazel-nut to an egg, develop over the region of the tibiæ. In some cases the forearms, trunk, and, more rarely, the face are involved. The nodes are rosy red in color, tense and shining, like erysipelas,

and exquisitely tender to the touch. At first hard, they later soften, but never suppurate. Their duration is from a week to ten days, during which time they undergo all the color gradations observed in common contusions. In number they vary from about five to twenty. Erythema nodosum is frequently associated with other forms of erythema multiforme.

**Etiology.**—The affection is largely observed in youth and early adult life. It is uncommon after the age of thirty. It is met with two to five times as frequently in females as in males. Rheumatism, gastro-intestinal disorders, and general nutritive disturbances are not infrequently associated. S. Mackenzie, from a study of 108 collected cases, concluded that erythema nodosum is frequently, if not generally, an expression of rheumatism, even when no definite rheumatic symptoms are present. Harrison, who personally observed 80 cases of erythema nodosum among 15,000 skin-diseases, denies its relationship to rheumatism.

That this cutaneous manifestation is a genuine rheumatic process there is, in my opinion, grave reason to doubt. I believe that erythema nodosum is a toxic affection, and, like erythema multiforme, may be produced by a variety of poisons. The rheumatic infection constitutes one of the most frequent poisons capable of producing the disease.

Erythema nodosum occurs occasionally in the course of syphilis, tuberculosis, glandular fever, diphtheria, malaria, and is believed to be induced at times by digestive disorders, autointoxication, bad sanitation, and such drugs as iodids and antipyrin. I have observed a case of erythema nodosum during the secondary period of syphilis.

**Pathology.**—The nodes show serous exudation throughout the entire cutis, and even the subcutaneous tissue. There is dilatation of the blood-vessels and the lymph-spaces, and some cell-infiltration. Blood-pigment from hemorrhages is present.

**Diagnosis.**—The distribution, tenderness, symmetry, course, and color changes of the lesions enable one to differentiate the affection from bruise, abscess, gumma, and erythema induratum.

**Prognosis.**—Favorable, recovery ensuing in from two to six weeks. Recurrences are comparatively rare.

**Treatment.**—The bowels should be kept freely open. Sodium salicylate commonly gives relief from the associated joint pains. Locally, lead-water and laudanum applications, with rest and elevation of the limbs, give

**ERYTHEMA SCARLATINOIDES**

**Definition.**—Scarlatiniform erythema is the cutaneous expression of a non-contagious disorder resembling true scarla-



Fig. 10.—Scarlatiniform erythema, exhibiting desquamation similar to that observed in scarlet fever.

tina in its surface manifestations, but running a quite different course.

**Symptoms.**—The condition comes on suddenly, and is often attended with malaise, chill, and a temperature varying from

100° to 103° F. The eruption is either punctiform or diffuse, and may begin on any portion of the body. The eruption is often partial, not involving the trunk in its entirety; patches of redness with marginated borders are sometimes seen. The face is often free of eruption; at other times intensely involved. The duration of the eruption varies according to its intensity. Desquamation begins early—about the third or fourth day—and may be either furfuraceous or lamellar.



Fig. 11.—Scarlatiniform erythema: desquamation upon the hands. Patient a man of twenty-nine years, has had two attacks every year of his life (Welch and Schamberg).

In the type designated by the French “*erythema scarlatiniforme desquamativum*” the symptoms are, as a rule, more severe and the eruption more intense. The rash ordinarily lasts from one to six days. The resulting desquamation is most profuse, leading often to the throwing off of epidermal casts of the hands and feet. The hair and nails are occasionally shed. This type of the disease is extremely apt to recur from time to time—not infrequently at periodic intervals. A patient, twenty-nine years of age, who consulted me during an attack, gave the history that he had had two outbreaks each year since the first year of his life. Some of the multiple attacks of

scarlet fever recorded by the older writers should doubtless be included under this head.

**Etiology.**—The etiology is obscure. Idiosyncrasy plays a most important rôle. Scarlatinoid erythema is apt to supervene during the course of other diseases, chief among which may be mentioned rheumatism, pyemia, septicemia, malaria, peritonitis, ptomainpoisoning, small-pox, typhoid fever, diphtheria, etc. Rashes of this character may occur in the præruptive period of varicella and measles. The affection is less common since the introduction of antiseptics. A scarlatiniform erythema may follow at times the ingestion of drugs, particularly quinin, but also salicylates, veronal, mercury, opium, antipyrin, copaiba, belladonna, etc. It may also appear after the use upon the skin of such external applications as the unguentum hydrargyri, iodoform, etc.

**Diagnosis.**—It is extremely important to differentiate this disease from scarlatina.

#### SCARLATINIFORM ERYTHEMA.

1. Onset with constitutional symptoms, which are usually very mild compared with intensity of eruption.
2. Eruption frequently not generalized; erythema at times marginated.
3. Face either exempt or more involved than in scarlet fever.
4. Tongue may be quite normal.
5. Fauces may be reddened.
6. Desquamation may be intense but terminates comparatively early.
7. Frequent history of previous attacks.
8. Not contagious.

#### SCARLET FEVER.

1. Onset with more severe constitutional disturbances, and commonly with vomiting.
2. Eruption punctate, generalized and not marginated, save at times on arms.
3. Face frequently exhibits eruption. Cheeks deeply flushed, with circumoral pallor.
4. Tongue coated, edges red, papillæ enlarged.
5. Fauces swollen, tonsils enlarged and often coated with thin, yellowish exudate.
6. Desquamation may continue from four to ten weeks.
7. Second and third attacks of genuine scarlet fever are rare.
8. Frequently history of contagion.

**Prognosis.**—Favorable. Recurrences are frequent.

**Treatment.**—For the eruption, simple dusting-powders or starch or bran baths may be used, followed by a mild emollient ointment. The underlying condition must be ascertained and treated. A saline purge is usually indicated at the outset.

## ERYTHEMA INDURATUM

*Synonym.*—Erytheme induré des scrofuleux (Bazin).

**Definition.**—Erythema induratum is an inflammatory affection occurring in scrofulous individuals, characterized by circumscribed, purplish-red nodular infiltrations of the skin, particularly involving the legs and disappearing either by absorption or necrosis.

**Symptoms.**—Strumous girls and young women are most liable to the disease. It may, however, occur in boys, and occasionally in elderly subjects. The affection is most frequent in winter, and attacks individuals who suffer from cold hands and feet. Overwork and prolonged standing seem to be etiologic factors. The lesions consist of ill-defined, finger-nail-sized or larger, bluish-red, infiltrated patches involving by predilection the calves of the legs. The infiltrations can often be better felt than seen. In rare cases the thighs or upper extremities may be attacked. As a rule, but one or two patches are present. Pain and tenderness are generally absent, but in some cases may be marked. The infiltration may gradually be absorbed or may slough, leaving an indolent ulcer. The affection is uncommon.

**Diagnosis.**—The absence of systemic disturbance and tenderness, the long duration, the relapses, and the paucity of lesions distinguish this affection from erythema nodosum. The subjects may present other signs of the tuberculous diathesis.

**Prognosis.**—The affection may persist for a long time. Even after apparent cure, relapses are prone to occur.

**Treatment.**—The treatment leaves much to be desired. Cod-liver oil, tonics, good food, and prolonged rest with elevation of the legs are the chief therapeutic measures. When the patient is upon her feet, a well-applied bandage should be worn.

## ERYTHEMA ELEVATUM DIUTINUM

In 1894 Campbell, Williams, and Crocker proposed the above designation for a rare disease characterized by small, pea- to bean-sized painless nodules, at first pinkish in color, but later acquiring a purplish tinge. The lesions are convex in the beginning, with a tendency to form raised plaques or irregular-lobed infiltrations by coalescence. In severe cases actual



nodular tumors may form. The parts usually affected are the extensor surfaces of the limbs, particularly over the joints, elbows, knees, fingers and toes. They may also be present upon the palms, soles, buttocks, and ears. The lesions are firm to the touch, and usually persist for a long time. In some cases, however, they undergo involution. Nearly all the cases reported have been female children or young female adults. Gout and rheumatism are regarded as factors in the etiology of the disease.

Pathologically, the lesions appear to be fibromata of inflammatory origin.

The treatment is unsatisfactory. One case recovered while taking arsenic internally and using locally the liquor carbonis detergens.

### PELLAGRA

*Derivation.*—*L.*, *pellis*, skin; *ager*, diseased, or *agra*, rough.

**Definition.**—Pellagra is an endemic, constitutional disease, characterized by symptoms affecting the alimentary, nervous, and cutaneous systems, and not infrequently terminating fatally.

The disease was first described by the Spanish physician, Casal, in 1735. The disease is common in Italy, Spain, Egypt, and the provinces of southern Europe. Within recent years a considerable number of cases have been observed in the United States, particularly in the Gulf States.

**Symptoms.**—Prior to the onset of characteristic symptoms, patients may complain for quite a time of lassitude, vertigo, epigastric pain, loss of appetite, diarrhea, headache, and, at times, vomiting. These usually occur in the early spring, and are followed rather suddenly by the appearance of the skin manifestations. The eruption develops upon those areas exposed to the sun's rays—namely, the face, neck, hands, and, at times, the feet. The "pellagrous collar," one of the characteristic cutaneous features, corresponds to the area exposed to light, and is limited by the upper border of the shirt.

The backs of the hands exhibit the most common expression of the disease. Here there is seen a dull red erythema or sunburn, which gradually deepens to a brownish red and finally eventuates in a brownish pigmentation. In the beginning the skin is tense, swollen, and the seat of burning. Vesicles and blebs may at times be present. The eruptive phenomena

subside in a fortnight, leaving the skin pigmented, roughened, and desquamating. Ultimately atrophic thinning of the skin takes place. A conspicuous and highly characteristic feature of the erythema and subsequent pigmentation is the sharp margination of the upper border upon the wrist or forearm, producing the so-called "pellagrous glove." The feet are in some cases involved, and a "pellagrous boot" has been des-



Fig. 12.—Pellagra; fatal case (patient of Dr. Clara Fitzgerald).

cribed. More rarely other portions of the cutaneous surface may be the seat of the eruption.

The *nervous* symptoms consist of spinal tenderness, exaggerated reflexes, mental depression, often ending in melancholia, psychic irritability, convulsions, stupor, hallucinations, etc. Pellagrous insanity is usually of the depressive type.

The *gastro-intestinal* symptoms, which may develop at any stage, consist of a reddened tongue, with prominence of the

papillæ, salivation, stomatitis, intense thirst, and severe and intractable diarrhea.

The disease is apt to undergo exacerbations in the spring and fall, increasing in severity with the recurring seasons. In the interim there is often an abatement of the symptoms.

In the final stage, when prostration, emaciation, stupor, and low delirium, set in, a condition resembling typhus is developed,



Fig. 13.—Pellagra (patient of Dr. Clara Fitzgerald).

and the term “typhus pellagrosus” has been applied to this state. Pellagra is usually afebrile, but in the acute or terminal stages fever may be present.

*Etiology and Pathology.*—The cause of pellagra is unknown. It was for a long time believed to be due to the ingestion of diseased maize or corn, but this theory is by no means proved,

and there are many observers who do not subscribe to this doctrine. The subjects are largely poverty stricken, poorly nourished, and living under bad hygienic conditions, although isolated cases among the affluent are not unknown. Some writers regard pellagra as a symptom-complex, rather than a disease entity. Amebæ have been found in the stools of many of the patients in this country. The poison of the disease appears to sensitize the skin to the action of the chemic rays of light.

At autopsy various tracts of the spinal cord have at times been found to be degenerated; pachymeningitis and sclerosis of the brain have also been noted. Most patients are between twenty and fifty years of age.

**Diagnosis.**—The most characteristic symptoms of pellagra are indicated by the alliterative formula—the three d's—dermatitis, diarrhea, and depression. The concurrence of a sun erythema of the face and hands, of the character previously described, with disturbances of the digestive tract and nervous system, should cause one to suspect this disease. Poorly marked cases may present difficulties and require observation.

**Prognosis.**—Mild cases often recover under appropriate hygienic treatment. Severe or advanced cases are incurable, and usually fatal in five years or less. Moderately mild cases may live for a much longer period.

**Treatment.**—Good food and proper hygienic surroundings appear to be the most important therapeutic considerations. Arsenic, iron, and tonics have been advised.

## ACRODYNIA

**Synonym.**—Epidemic erythema.

**Definition.**—Acrodynia is an acute epidemic disease, characterized by an erythematous eruption, thickening, desquamation, and pigmentation of the skin, and disorders of the nervous system. The disease first occurred in Paris about 1830, when almost forty thousand persons were attacked.

**Symptoms.**—The salient features of the affection are: gastro-intestinal irritation, conjunctival injection, edema of the face, erythematous eruption upon the hands and feet, thickening, desquamation, and pigmentation of the skin, and sensory disturbances (pain, hyperesthesia, anesthesia, etc.). Cramps, spasms, and tetanic contractions are also common.

**Etiology.**—The disease is probably caused by the action of

some toxic substance upon the central nervous system. It is somewhat related to pellagra.

**Prognosis.**—Favorable, most cases recovering in a few weeks to a few months.

**Treatment.**—To be based upon general principles. Brocq advises counterirritation to the spine.

### URTICARIA

*Derivation.*—L., *urtica*, a nettle. *Synonyms.*—Hives; Nettle-rash.

**Definition.**—Urticaria is an inflammatory affection of the skin, characterized by the formation of evanescent whitish and pinkish elevations of an edematous nature, attended by intense itching.

**Symptoms.**—The eruption appears suddenly, manifesting itself as firm, circumscribed, whitish or pinkish elevations (wheals, pomphi) with reddish areolæ. The wheals last from a few minutes to several hours, disappear, and are succeeded by others. They are asymmetric, though usually bilateral, of pea or bean size, and irregular in shape, often, however, being linear. They may involve any portion of the cutaneous surface, or even the mucous membranes. When the pharynx or larynx is involved, alarming suffocative attacks may occur. The lesions may be few in number or may cover almost the entire surface of the body.

The itching in urticaria is intense, the relief produced by scratching being purchased at the cost of the excitation of new lesions. The skin is markedly sensitive to all sorts of irritation, and responds by the production of wheals. The artificial production of wheals gives rise to the form termed *urticaria factitia*. In some urticarial subjects one can inscribe a name upon the skin with a pointed instrument, and in a few minutes observe the letters stand out in wheals as if embossed. To this phenomenon the term *dermographism* is given. Such a reaction may also be provoked, at times, in those who may not be the subjects of spontaneous urticarial outbreaks.

In children urticaria is apt to take the papular form—*urticaria papulosa* (lichen urticatus). In such cases there are hard, skin-tinted inflammatory papules present, with a reddish, edematous areola; the areolæ later disappear, but the papules persist. The summits of the papules are apt to be excoriated on account of the scratching prompted by the intolerable itching.

When papules are present upon the hands, the disease bears

a considerable resemblance to scabies. Papular urticaria is often rebellious in its response to treatment, particularly in cases in which it is impossible to control the diet of the child.

In some individuals wheals attain the size of an egg or even larger. This form is called *urticaria tuberosa* or *urticaria gigans* (giant urticaria). Hemorrhage into the wheal occurs occasionally, giving rise to the form known as *urticaria hæmorrhagica*. At times the upper layers of the wheal are raised into a bleb by the subjacent serum: this type is designated *urticaria bullosa*.

Wheals or wheal-like lesions which tend to persist, as they



Fig. 14.—Dermatographism (urticaria factitia).

occasionally do, for some days or weeks, have given rise to the type designated *urticaria perstans*.

Urticaria, as a rule, runs an acute course, subsiding in a few days to a week. In many cases the attack lasts but twenty-four hours. In exceptional instances, however, urticaria may become chronic, wheals appearing, disappearing, and reappearing, the process extending over a period of months or even years.

**Etiology.**—The great majority of cases of acute urticaria are produced through some disorder of the alimentary tract. Substances taken into the stomach may cause urticaria, either

by a mechanical irritation of the stomach or bowel or by producing a toxemia. Intestinal parasites and undigested aliment act by mechanical irritation. The substances capable of producing toxemia are almost numberless. They may be primarily toxic, or may develop their toxicity through putrefactive changes while in the bowel. Again, a large number of substances, both food and drugs, perfectly innocuous to the ordinary individual, act as poisons to others. The following articles of food are apt to produce hives: lobsters, crabs, mussels, cheese, sausage, pork, nuts, strawberries, oatmeal, mushrooms, caviar, shrimps, salted fish, clams, oysters, scrapple, veal, grape-skins, etc.

The following drugs are prone to produce urticarial eruptions: quinin, copaiba, cubebs, salicylic acid, morphin, turpentine, chloral, valerian, arsenic, glycerin, and many of the coal-tar products. Antitoxic sera, such as those used in diphtheria, tetanus, streptococcus infection, etc., commonly induce an urticarial eruption. Urticaria may be produced reflexly also by irritation of viscera other than the alimentary tract. Thus, irritation of the uterus and adnexa may act as an etiologic factor. Rupture or puncture of hydatid cysts or puncture of pleural effusions may be followed by hives. Again, the disease may be produced by direct local irritation, such as the sting of a nettle, the bite of the jelly-fish, mosquito, wasp, etc. Among the causes of chronic urticaria may be prominently mentioned gastro-intestinal disorders, neurasthenia in its various forms, and renal disease.

**Pathology.**—The wheal is produced as the result of direct or reflex disturbance of the vasomotor apparatus. The lesion consists of a circumscribed edema of the cutis. A momentary spasm of the cutaneous vessels is followed by a dilatation, with exudation of serum and some leukocytes. At the summit of the lesion the effusion is so great as to produce a pressure anemia, hence the whitish coloration. The peripheral vessels are engorged, hence the reddish areola. The lesions are remarkable for the rapidity of the evolution and involution of the inflammatory processes that take place in them. According to Gilchrist, wheals artificially produced show within a few minutes cellular extravasation into the tissues and other evidences of inflammation.

Urticaria is regarded by many as an angioneurosis, but

Phillipson, Török, Hari, and others dissent from this view and conclude, from numerous experiments, that the lesions are due to the action of irritants upon the blood-vessel walls.

Wright and Paramore, as a result of their researches, believe that an attack of urticaria may result from a defective coagulability of the blood, due to the lessening of lime salts.

**Diagnosis.**—Urticaria is usually distinguished without difficulty. The presence of wheals, their rapid evolution and brief duration, and the intense itching enable one to rapidly establish the diagnosis. Urticarial lesions are often produced by various parasites and insects, such as bedbugs, fleas, etc. In this case a central punctiform hemorrhage or blood-crust is often seen. Urticaria papulosa is often erroneously diagnosed, particularly when nothing remains but the scratched papules. Patients sometimes present themselves without any lesions of urticaria, but with the history of an evanescent itching eruption.

**Prognosis.**—Ordinary attacks of acute urticaria recover in a few days; some cases may persist for a few weeks. Chronic urticaria may last for a long time and may exhaust the entire therapeutic armamentarium of the physician.

**Treatment.**—In severe acute cases, if seen early, an emetic may be given, as nearly all such cases are urticaria *ab ingestis*; at a later period the offending material may be removed by calomel, followed by the use of saline purgatives, such as Rochelle salts or magnesium sulphate. In subacute cases salol, phenacetin, or antipyrin in five-grain doses will often serve a useful purpose.

Wright and his followers advise the use of calcium lactate in a single dose of 30 grains, particularly where acid fruits appear to have brought on the attack.

In chronic urticaria the initial object is to determine the cause and then to effect the removal thereof. The patient's dietary must be the subject of careful study. Every detail of mode of life, occupation, environment, habits, as to exercise, eating, drinking, sleep, etc., must be studiously investigated. The urine should be carefully examined, and the functions of the various organs studied. Usually the alimentary canal will be found to be the *fons et origo mali*. Dyspepsia, if it exists, must be corrected and the diet carefully regulated; the intelligence of the patient will often aid one in discovering an offending article of diet. It is important to keep the bowels freely open. Intestinal antiseptics are often of value; it is doubtless on this



account that sulphurous acid has been found useful. It is to be given in one-half to one-dram doses in water after meals. Duhring speaks well of the sodium hyposulphite in ten- to fifteen-grain doses. The natural Carlsbad Sprudel salts, a teaspoonful in a cup of hot water before breakfast, should be tried where there is a tendency to hepatic sluggishness. Crocker says that the gouty diathesis is frequently causative, and advises the alkalis in such subjects. I have known long-standing cases in neurasthenic subjects to recover only after a protracted rest-cure.

In obscure cases some of the following remedies may be tried: atropin by mouth or hypodermatically, antipyrin, phenacetin, quinin, long-continued small doses of arsenic, sodium salicylate, bromids, pilocarpin, suprarenal extract, etc.

*Local treatment* is necessary to give the patient relief from the harassing itching. Often a hot bath on retiring, containing a handful of washing-soda, will give great comfort to the patient. In some patients a warm bath will act better than one of higher temperature.

The patient should wear undergarments of soft linen, cotton, or silk. The best antipruritics are carbolic acid, tar, menthol, chloral, camphor, etc.

The following lotion will be found of great value; where excoriations from scratching are present, it may prove a little too strong, and may require dilution:

|                                  |                     |
|----------------------------------|---------------------|
| R. Menthol . . . . .             | gr. xxx;            |
| Acidi phenici . . . . .          | ℥j;                 |
| Tinct. picis mineralis . . . . . | ℥j-ij;              |
| Ext. hamamelidis dest. . . . .   | ℥j;                 |
| Zinci oxidi . . . . .            | ℥ij;                |
| Glycerini . . . . .              | ℥ij;                |
| Spirit. vini rect. . . . .       | ℥ij;                |
| Aquæ camphoræ . . . . .          | ℥ij;                |
| Aquæ . . . . .                   | q. s. ad ℥viiij.—M. |

In some patients soft ointments appear to do well and to give a longer period of relief from itching. The following combination is one of the most useful:

|                         |         |
|-------------------------|---------|
| R. Menthol . . . . .    | gr. x;  |
| Acidi phenici . . . . . | gr. xx; |
| Adipis benzoat. . . . . | ℥j.—M.  |

CASELL : BPA :

## URTICARIA PIGMENTOSA

*Synonym.*—Xanthelasmaidea.

**Definition.**—Urticaria pigmentosa is an inflammatory affection of the skin beginning usually in the first six months of infancy, and characterized by persistent, buff-colored, wheal-like nodules, with or without itching.

**Symptoms.**—The eruption is most abundant upon the neck and trunk. It consists of yellowish-red, split-pea-sized nodules



Fig. 15.—Urticaria pigmentosa; eruption appeared at the age of one year.

or wheals with pinkish areolæ. The nodules later become yellow, and may remain stationary for months or years. Some undergo involution, leaving brownish stains after them. Itching is often severe, but may be moderate or entirely absent. The eruption prefers the trunk, but not infrequently spreads into the scalp and upon the extremities.

**Etiology.**—All that can be said as to cause is that there is a strong congenital predisposition.

**Diagnosis.**—The affection at times presents a striking

resemblance to xanthoma tuberosum, but the onset in early infancy and the occurrence of ordinary wheals will help to differentiate it.

**Pathology.**—Inflammatory changes similar to those seen in ordinary urticaria are present. A highly characteristic feature is the presence of mast-cells in great abundance and arranged in rows in the papillary layer.

**Prognosis.**—The disease not infrequently disappears as the period of puberty is reached. Sometimes cure takes place at an earlier period, although the disease is notoriously obstinate to treatment.

**Treatment.**—Itching may be relieved by the remedies referred to under the head of Urticaria. No internal medication appears to exert much influence upon the disease, although in one of Crocker's cases small doses of arsenic were found to be helpful. The diet and the condition of the gastro-intestinal tract should be regulated.

### ANGIONEUROTIC EDEMA

**Synonyms.**—Acute circumscribed edema; Quincke's disease; Giant swelling.

**Definition.**—An affection characterized by the rapid appearance of circumscribed edematous swellings, chiefly attacking the face and tending to disappear after several hours or days.

**Symptoms.**—The swellings come on suddenly, developing often within the course of a few minutes or hours. Patients often awake in the morning with the eyelid swollen shut or a protuberant lip or ear. Large areas or the whole of an extremity may also be involved. The mucous membrane of the alimentary or respiratory tract may be the seat of edema, producing in the latter case marked suffocative attacks.

Itching is not so pronounced a symptom as in urticaria. The affection is, however, closely related to this disease, and, according to Osler, is merely "an urticaria writ large." There is a pronounced tendency to recurrence of the attacks.

**Etiology.**—Hereditary predisposition, digestive disturbances, with formation of intestinal toxins, and the causes of urticaria in general are doubtless responsible for most cases.

**Treatment.**—The treatment consists in the removal of the cause and is virtually that of urticaria.

## ECZEMA

*Derivation.*—*Εκζεiv*, to boil over. *Synonyms.*—Tetter; Salt rheum, etc.

**Definition.**—An acute, subacute, or chronic non-contagious inflammatory disease of the skin, characterized primarily by erythema, vesicles, papules, or pustules, and secondarily by scaling and crusting, and accompanied by itching and burning.

Eczema constitutes about 30 per cent. of all skin diseases. It is met with at all ages and in all conditions of life. It may, therefore, be said to be the most important of all dermatoses.

**Symptoms.**—There are four elementary types of eczema: eczema erythematosum, eczema papulosum; eczema vesiculosum, and eczema pustulosum.

These terms indicate that the disease begins with the formation of patches of redness, of papules, vesicles, or pustules. Often the peculiar type of the eruption remains distinctive, even though secondary modifications occur. For instance, an erythematous eczema can usually be recognized as such for a considerable period of time. The papular and vesicular forms may preserve their special characteristics or may be transformed into one of the other forms.

While it is clinically convenient thus to classify the primary forms of eczema, it must be remembered that the varieties described cannot be too trenchantly separated. They are all manifestations of the same morbid process, and intermingled forms are quite common. Several varieties of lesions may appear simultaneously, or one form may quickly eventuate in another. In mixed eruptions, however, one type of lesion usually predominates.

*Eczema Erythematosum.*—This variety of eczema is encountered most frequently upon the face, the arms, and the genitalia, but may occur upon any portion of the cutaneous surface. It begins as vaguely defined bright- or dull-red spots, which soon coalesce and form diffuse areas. The skin is roughened and slightly infiltrated. When the region about the eyes is involved, there is marked edema, which results in a partial or complete closing of the lids. The eruption is accompanied by considerable heat and itching. Convalescence is indicated by a fading of the color, by a branny desquamation, and the occurrence of islets of sound skin. This form of eczema exhibits a marked tendency to recurrence. It is more particularly seen in adults of middle or advanced life.

The erythematous type may run an acute course and end in recovery, or it may become chronic. It is not infrequently transformed into the vesicular, pustular, or squamous variety.

*Eczema Papulosum*.—Papular eczema involves by predilection the arms, back, and legs. It is characterized by pin-head-sized, round or acuminate, reddish elevations, either discrete or closely aggregated. Not infrequently the papules are



Fig. 16.—Papular eczema of the face, arms, and hands of several years' duration.

closely grouped, forming finger-nail-sized or larger patches. Much larger areas may be formed by the coalescence of lesions, producing large infiltrated plaques in which the papules as such cannot be distinguished. These areas show an exaggeration of the furrows of the skin and undergo what the French call "lichenification." The itching is apt to be severe, leading to scratching and consequent excoriations and superficial losses of tissue. Not infrequently discretely arranged papules

are, upon close examination, seen to be surmounted by minute vesicles.

Papular eczema is often refractory to treatment; even after the disappearance of the eruption there is a strong tendency to relapse. The itching in this variety of eczema is more pronounced than in most of the other forms.

*Eczema Vesiculosum*.—The onset of a vesicular eczema is heralded by tingling and a feeling of heat. Soon there develop, upon an erythematous and swollen base, numerous pin-point- to pin-head-sized vesicles, which rapidly become confluent and rupture, permitting the escape of a viscid and sticky serum. The drying of this exudation produces yellow, gummy crusts. The rupture of the vesicles is followed by an abatement of the subjective phenomena. Beneath the crusts the serous exudation continues. The body linen is stained and stiffened by this constant oozing or weeping.

The eruption may develop upon any portion of the body; it is common upon the faces of infants, in which locality it has been designated *milk-crust* by the older writers. It is also extremely frequent upon the hands and feet of adults. In this region the lesions develop in small groups and appear in crops at variable intervals. Patches of vesicular eczema are usually not sharply margined, but fade gradually into the surrounding healthy integument.

Acute attacks may recover in one or two weeks. Commonly there is a tendency to recurrence. Convalescence is indicated by a cessation of oozing, lessening of the redness, throwing off of the crust, and the formation of a new epithelial covering. A certain amount of redness will persist for some time after healing.

Burning, itching, and soreness are often pronounced. The



Fig. 17.—Papular eczema of the axilla of the seborrheic variety.

itching increases with each renewed development of vesicles. Mechanical rupture of the vesicles purchases a certain degree of relief from itching. Infants commonly scratch their faces in a most cruel fashion, producing not only an outpouring of serum, but often streams of blood.

Vesicular eczema frequently terminates in eczema rubrum. Through infection with pyogenic organisms a pustular eczema may supervene.



Fig. 18.—Crusted vesicular eczema of face; duration, two weeks.

*Eczema Pustulosum (Eczema Impetiginosum).*—Pustular eczema may begin as such, or may develop from the vesicular variety. It occurs most commonly upon the face and scalp of strumous and poorly nourished children. Rupture of the pustules is followed by the formation of profuse yellowish, brownish, or greenish crusts. This variety of eczema is most common in hairy regions. In adults it is often seen in the mustache, beard, or on the hairy parts of the body. The itching is less pronounced than in the other forms of eczema.

*Eczema Rubrum.*—Eczema rubrum is due to an aggravation and modification of one of the primary forms of the disease,



Fig. 19.—Eczema pustulosum.

particularly the vesicular or pustular varieties. It is characterized by redness, swelling, infiltration, surface exudation,



Fig. 20.—Crusted infantile eczema rubrum; common type.

and frequently crusting. It is commonly seen upon the legs of elderly persons and upon the faces of infants. When upon the legs, the skin, in pronounced cases, exhibits a vivid red



color with denudation of the horny layer of the epidermis, permitting the exudation upon the surface of a yellowish, clear or turbid serum; this oozing may occur as a diffuse and scarcely visible transudation, or it may be present in numerous discrete droplets. The fluid is viscid and dries in the form of crusts of a yellowish color, or if there be an admixture of blood, of a brownish tint. The skin is infiltrated, and not infrequently the entire leg is hot and swollen.



Fig. 21.—Eczema rubrum, with leg ulcer.

A similar appearance is presented upon the faces of infants; the skin is either red, raw, and weeping, or covered with yellowish or brownish crusts. To that form in which moisture constantly oozes from the skin the name *eczema madidans* has been given.

Pronounced burning and itching are present, leading, especially in children, to scratching and to consequent bleeding.

*Eczema Squamosum.*—The term squamous eczema is applied to a modified, chronic erythematous or papular eczema in which infiltration and scaling are pronounced features. To be sure, the convalescent and regenerative stage of all eczemas



Fig. 22.—Thickened squamous eczema in a patient whose hands were much exposed to cold.

is characterized by a certain degree of scaling, and to this terminal transitional condition the designation squamous eczema is likewise given. Erythematous eczema is particularly prone to terminate in the squamous form.



Fig. 23.—Squamous eczema, showing unusually sharp margination of the patches.

It often follows, or, more properly speaking, is associated with, the erythematous form. Squamous eczema may involve large areas of the cutaneous surface or may be present in small patches. The scales are thin, flaky, and usually of a grayish-white color; they are much more scanty and easily detached than those of psoriasis.

It would appear appropriate to include under squamous eczema the horny variety so frequently seen upon the palms of the hands and soles of the feet. In this condition, which is sometimes called *eczema tyloticum*, owing to the resemblance to callosities, the horny layer of the epidermis is enormously thickened; indeed, it is often impossible to close the hand. Painful fissures develop, not infrequently leading to bleeding. Similar fissures are also commonly present upon the fingers and toes, where the epidermis is more moderately hypertrophied, or, indeed, where there is no thickening at all, the skin being merely reddened, glazed, and tense. To these various fissured conditions the term *eczema fissum* has been applied.

*Chapping* is a familiar but mild example of this form of eczema, due to cold winds, immersion of the skin in cold water, the use of irritating soaps, etc.

At times leathery infiltrations of the skin unaccompanied by much redness gradually develop; this condition, which is chronic and indolent and accompanied by much thickening and at times hardening of the skin, is called *eczema sclerosum*. It is most often encountered upon the extremities.

*Eczema verrucosum* is characterized by warty excrescences covering long-standing patches of the disease; sometimes a foul-smelling discharge exudes from the vegetations. A more exaggerated papillary hypertrophy leads to *eczema papillatosum*.

**Etiology.**—It is difficult to comprehend how a morbid entity, such as eczema, can be the direct result of so numerous and diverse causes as are generally held to be responsible for this condition. The causes are both constitutional and local, the former acting from within and the latter from without. While local and constitutional factors may in some cases lead to the development of an eczema independently of each other, they more often are associated in the causation. In many instances, therefore, the constitutional factors may be regarded as predisposing causes, in that they create a cutaneous weakness or vulnerability. Under such circumstances local irritants of various kinds, ordinarily inadequate to cause an eczema, may bring about such a result.

Local causes may come under three classes of irritants—chemical, thermal, and mechanical—or a combination of these may be operative in the production of an eczema.

*Chemical irritants* comprise various medicinal agents, such

as iodine, arnica, mustard, soap containing an excess of alkali, dye-stuffs, surgical antiseptics, etc. In certain occupations eczema is produced by repeated chemical irritation; the most common trade eczemas are seen in washerwomen, bakers, grocers, surgeons, chemical workers, etc.

*Thermal irritants* comprise the solar rays and artificial heat from stoves, furnaces, etc. Stokers and blacksmiths often develop eczema from this source.

Cold is probably a more potent factor in the production of eczema than heat: the cold winds of winter and early spring are responsible for many eczemas of the face and hands.

Among *mechanical irritants* are included scratching, a frequent factor in the production and aggravation of eczemas, parasites, friction, pressure from clothing, trusses, garters, etc.

Among the *constitutional causes*, alimentary disorders play a most important rôle. Errors of diet, digestion, assimilation, and elimination, leading to absorption of toxins and leuko-mains, must be regarded as common causes of eczema in both infants and adults. These manifest themselves as dyspepsia in one form or another, constipation, and, in many instances, gout.

The gouty and rheumatic diatheses, so called, are invoked as frequent causes of eczema by nearly all writers. Functional or organic defect of any abdominal viscus may be a causative factor in eczema.

Some cases of eczema are distinctly due to disturbance of the nervous system; these may develop as a result of psychic shock, emotional excitement, or, as is more commonly the case, from a lowered and depraved state of the nervous system—in other words, from neurasthenia.

Other well-recognized predisposing causes of eczema are nephritis, diabetes, utero-ovarian disease, anemia, tuberculosis, malaria, and such physiologic conditions as dentition, pregnancy, and lactation.

It is not likely that microorganisms play any part in the primary development of a true eczema; they are often responsible, however, for secondary changes.

**Pathology.**—The blood-vessels are markedly dilated and there is a fluid and cellular exudation into the tissues. The papillary layer of the corium is swollen and the seat of a round-cell-infiltration. When vesicles are formed, the rete cells exhibit a parenchymatous edema; an intercellular edema also develops which pushes aside the cells and forms a lake of serum.

The roof of the vesicle is usually formed by the corneous layer of the epidermis. In eczema rubrum the horny layer is cast off without vesiculation, leaving the rete mucosum exposed. In chronic eczema the cell-infiltration extends deep into the corium, almost to the subcutaneous tissue, and the papillæ become hypertrophied.

**Diagnosis.**—The clinical expressions of eczema are most diverse and varied, but may be recognized by attention to certain cardinal symptoms: these are—(a) redness; (b) the development of papules, vesicles, or pustules; (c) the tendency to surface discharge of a mucilaginous character; (d) crusting and scaling; (e) thickening and infiltration; (f) itching and burning.

These phenomena are not all noted in each case, but a sufficient number is present in the various forms of eczema to permit identification.

*Scabies* is commonly confounded with eczema. In this disease there is a characteristic distribution of the lesions, viz., webs of fingers, flexor surface of wrists and arms, axillary folds, nipples, umbilicus, penis, buttocks, and inside of thighs and legs. The itching is severe and is distinctly worse at night on retiring. The lesions are multiform, and burrows are present between the fingers and on the wrists. There are commonly several persons affected in the same household. These features will serve to distinguish this disease from eczema.

*Herpes zoster* may be differentiated from vesicular eczema by the unilateral character of the eruption, its localization in the area of distribution of a nerve-trunk, the arrangement of the vesicles in clusters, the large size of the vesicles and their lack of tendency to spontaneous rupture, the neuralgic pains, and the absence of itching.

*Dermatitis* from the operation of mechanical, chemical, or thermal irritants may so closely resemble eczema as to defy differentiation. Indeed, some schools regard them as identical. Inflammations of the skin from irritants, particularly from contact with poisonous plants, are characterized by a greater degree of swelling, as a rule, than in true eczema; moreover, myriads of minute, closely aggregated vesicles are seen and there is a tendency, in many cases, to the formation of bullæ. Often burning is more pronounced than itching. The condition is, as a rule, more quickly amenable to treatment. Dermatitis may eventuate in eczema.

*Impetigo contagiosa* must be differentiated from pustular eczema; the former affection is contagious and autoinoculable. The lesions begin as discrete vesicles and blebs, instead of aggregated pustules, as in eczema; they are more superficially located, tend to rupture rapidly, and form yellowish, "stuck-on" crusts.

*Sycosis* differs from pustular eczema in its limitation to hairy regions, particularly the beard, mustache, and often the eyelids. The lesions occur only about the hair-follicles, and the inter-follicular skin is free. Itching or burning is mild; there is a tendency to chronicity and recurrences.

*Erysipelas* bears only a superficial resemblance to erythematous eczema of the face. The former may be differentiated by the fever and other constitutional symptoms.

*Psoriasis* may be readily distinguished from eczema, as a rule. Circumscribed eczema, on the one hand, and diffuse psoriatic areas, on the other, may present some difficulties in diagnosis. The predilection of psoriasis for the elbows, knees, and scalp, the sharp definition of the patches, the heaped-up, silvery or mica-like scales, the moderate degree of itching, and the history of recurrent attacks will clarify the diagnosis.

*Tinea circinata* bears a strong resemblance to a certain form of squamous eczema of the face in children occurring particularly in the early spring months. In *tinea circinata* the patches are circular, marginated, and distinctly clear in the center; but few lesions are present, as a rule. Ring-worm fungus is present in the scales. The eczema patches are round, but seldom annular—that is, clear in the center.

*Lichen planus* may be distinguished from papular eczema by the angularity, flatness, umbilication, and violaceous color of the papules, and by their persistence and tendency to affect the flexor surface of the wrists, the trunk, and the mucous membrane of the mouth.

*Lupus erythematosus*, *seborrhea*, *pediculosis corporis*, etc., may sometimes be simulated by eczema, but may usually be differentiated by attention to the special features of those diseases.

**Prognosis.**—Nearly all eczemas will yield to skilful and persevering treatment. Acute eczema responds much more rapidly than those of long standing; it should be the studious aim of physicians to cure eczematous processes in their early stages, for as the disease becomes subacute and chronic, struc-

tural changes occur in the skin which greatly increase the difficulties of successful treatment. The prognosis is greatly influenced by the type of the disease, the duration and extent of the eruption, the tendency to recurrences, the removability of the cause or causes, and, finally, the ability of the patient properly to care for himself.

**Treatment.**—*General Considerations.*—There are no specifics in the treatment of eczema: the methods of treatment are as varied as the diverse causes which give rise to the disease. As far as internal measures are concerned, the patient should be treated rather than the disease. Many eczemas are purely of local origin and require merely topical treatment to effect a cure. In those cases in which the eruption is the cutaneous expression of some underlying disease, as, for instance, diabetes or gout, the treatment must obviously be directed toward the *origo mali*. In many cases both local and general measures are necessary, including attention to the important matters of diet, exercise, sleep, and habits of living.

The first therapeutic endeavor should be directed toward the discovery and removal of the cause, but this is often difficult to ascertain.

*Diet.*—Much difference of opinion exists as to the degree and character of dietary restriction advisable. Certainly no general laws can be formulated as to the proper diet in eczema. The quantity and quality of food to be permitted is purely an individual question. Many patients require no dieting whatever, while others need to be placed under a most strict régime. Often a reduction in the quantity rather than a change in the quality is desirable. Regularity in eating and proper mastication are not unimportant considerations.

In a general way it may be said that salt meats, pork, shell-fish, pastries, confections, stimulating sauces, condiments, cheese, and excess of starchy and sugary foods should be avoided. Tea and coffee should be reduced to a minimum, and alcoholic beverages, as a rule, prohibited. Lean meats in moderate amount and fresh fish will usually do no harm.

*Relief of Constipation.*—Regulation of the bowels is an important consideration in the treatment of many eczemas, and accomplishes more actual good than the administration of remedies supposed to exert a direct influence upon the skin. It is preferable, if possible, to correct the constipation without resort to drugs. The free use of water between meals, the

eating of fresh and stewed fruits, particularly prunes and figs, and abdominal massage or gymnastics are measures to be advised. In many cases these will not succeed, and it then becomes necessary to employ laxatives.

In acute eczemas it is desirable to inaugurate the treatment with free catharsis. This is best accomplished by the use of salines alone or preceded by calomel.

A very useful preparation in the treatment of eczema complicated by constipation and anemia is the "acid mixture of iron." It combines the advantages of a tonic and laxative:

R. Ferri sulphatis..... gr. xxxvj;  
 Magnesii sulphatis ..... ʒi ss;  
 Acidi sulphurici dil. .... fʒij;  
 Tinct. cardamomi comp. .... fʒij;  
 Aquæ ..... q. s. ad fʒvj.—M.  
 Sig.—Tablespoonful in a tumbler of water before breakfast.

I have often prescribed a more palatable mixture, having much the same effect, save that its laxative properties are less marked:

R. Strychniæ phosphatis..... gr. j;  
 Ferri phosphatis..... gr. xlvij-xxij;  
 Sodii phosphatis ..... ʒi;  
 Syrupi aurantii } ..... aa q. s. ad fʒvj.—M.  
 Aquæ }

Sig.—Two fluidrams in water before meals.

The saline waters, of which Hunyadi János, Apenta, Pluto, and Carabana water are types, are both efficient and convenient of administration.

When constipation is associated with congestion of the liver, the natural Carlsbad salts may be used with great advantage. The usual dose is one teaspoonful dissolved in a cup of hot water fifteen minutes before breakfast.

In infantile eczema I have often employed with good results the following prescription:

R. Hydrargyri chloridi mitis..... gr. j;  
 Syrupi rhei..... fʒij;  
 Olei ricini..... fʒij;  
 Pulv. acaciæ ..... gr. xx;  
 Aq. menthæ piperitæ ..... q. s. ad fʒij.—M.  
 Sig.—Teaspoonful at bedtime.

*Digestive Remedies.*—Dyspepsia is often responsible for eczema, and must be combated by appropriate measures. Diet is, of course, of supreme importance. In certain cases



the mineral acids, particularly hydrochloric acid, act well; in other cases alkalis are indicated. Rhubarb and bicarbonate of soda may be used in the latter class. In patients with atonic dyspepsia and constipation the following formula is useful:

R. Tinct. nucis vomicæ . . . . . fʒiv;  
 Fluidext. cascariæ sagradæ . . . . . fʒvj;  
 Tinct. cardamomi comp. . . . . q. s. ad fʒiij.—M.  
 Sig.—One fluidram in water after meals.

*Diuretics.*—Diuretics are often of value both in acute and subacute eczema. The free use of water before meals and at bedtime is a simple but highly useful method of flushing the kidneys. Potassium acetate, citrate, or bicarbonate, in ten- to twenty-grain doses, may be given one-half hour before meals, or the alkaline mineral waters may be employed. These remedies are particularly indicated in renal insufficiency.

*Tonics.*—In strumous individuals, particularly in children with glandular enlargement, cod-liver oil is a remedy of the greatest efficiency. In anemic patients iron in one of its various forms should be administered. The use of milk and eggs should not be forgotten in the treatment of these conditions.

*Special Remedies in Eczema.*—The value of arsenic in this disease has been greatly overestimated; in reality it has a most restricted field of usefulness. It is capable of acting injuriously upon the skin, and should never be used in acute eczema and whenever the degree of inflammation is pronounced. It is occasionally of value in chronic papular and scaly eczemas; in other words, in those varieties which most nearly approach psoriasis in appearance.

The *wine of antimony* has been highly vaunted by certain English dermatologists. It is most useful in acute eczema in plethoric individuals. It is given in five-minim doses three times a day.

Crocker advises, in obstinate cases, oil of *turpentine* in an acacia emulsion flavored with essence of lemon. It should not be used where the kidneys and alimentary canal are not healthy. The initial dose is ten minims, to be gradually increased to twenty or thirty; a quart of barley-water is to be imbibed each day.

*Spinal counterirritation*, by means of a mustard leaf applied over the centers governing the affected areas of skin, is also advised by Crocker as a means of lessening the severe itching.

For the relief of itching Hyde and Montgomery advise full doses of quinin, particularly in children. Calcium chlorid is also recommended.

Opium is nearly always to be avoided; in urgent cases, where sleep is impaired, chloral, antipyrin, or sulfonal may be used.

**Local Treatment.**—The local treatment of eczema is perhaps the more important in the majority of cases. The selection of remedies and their strengths must be governed by the grade of inflammatory reaction present. In an acute eczema the remedies cannot be too soothing. Too strong an application works immediate injury; too weak an application can do no worse than fail to do good.

Water is an irritant in all acute and in many subacute eczemas, and is to be used as infrequently as is compatible with cleanliness. It may be made less irritant and, indeed, soothing by the addition of bran, starch, or gelatin. A pound of ordinary washing starch or bran is to be used to a tub of water; the latter is placed in a gauze bag in the water. Starch baths are extensively employed in France for eczema. In indolent chronic eczemas soap and water are of therapeutic value. They are useful at times also to remove crusts in the acute varieties. It is, however, a better plan to remove crusts by the process of softening. Pieces of flannel soaked in linseed or olive oil kept in contact with crusts for some hours will soften and loosen them; if they are very adherent, a lukewarm starch or flaxseed poultice may be applied. Pastes and salves should likewise be removed from the skin by oily and unguentous substances. Petrolatum (vaselin) or olive oil, and not soap and water, should be employed for this purpose.

*Local Treatment of Acute Eczema.*—At the onset of a vesicular eczema *dusting-powders* may be used with advantage. Many substances have been employed for this purpose: wheat-starch, corn-starch, rice-flour, bismuth subnitrate, talcum, magnesium carbonate (most absorbent), zinc oxid, boric acid, kaolin, etc. The following is a useful combination:

|    |              |       |       |     |      |
|----|--------------|-------|-------|-----|------|
| R. | Talci Venet. | }     | ..... | āā  | ʒiv; |
|    | Zinci oxidi  | }     | ..... |     |      |
|    | Amyli        | ..... |       | ʒj. | —M.  |

Or, if a more astringent one is desired:

|    |                     |       |       |      |      |
|----|---------------------|-------|-------|------|------|
| R. | Bismuth. subnitrat. | }     | ..... | āā   | ʒij; |
|    | Acidi borici        | }     | ..... |      |      |
|    | Amyli               | ..... |       | ʒiv. | —M.  |

*Lotions* are of paramount value in moist eczemas. They are, as a rule, borne much better than ointments. The simplest is a saturated solution of boric acid. This has been found to be just as soothing to the skin as it is to mucous membranes. Sopped on every hour in acute eczemas, it acts admirably in reducing inflammation. The following formula combines the advantage of a lotion and dusting-powder:

R. Zinci oxidi ..... ʒiij;  
 Glycerini ..... fʒj;  
 Aquæ calcis ..... q. s. ad fʒvj.—M.  
 SIG.—Use locally.

The addition of a dram of calamin to this lotion gives it a pinkish coloration, which renders the powder less conspicuous. When there is much itching, carbolic acid may be added to any of the above liquids, in the strength of one-half to one dram to six ounces of the lotion.

A preparation which is termed in our hospital pharmacopeia ‘‘compound resorcin lotion’’ has, after extensive trial, given most satisfactory results. Its composition is as follows:

R. Resorcini } ..... āā ʒj;  
 Acidi borici } .....  
 Glycerini ..... fʒj;  
 Zinci oxidi ..... ʒij;  
 Aquæ ..... fʒvj.—M.

The addition of lime-water to this sometimes increases its efficiency. In certain acute weeping eczemas, when all ointments seem to increase discomfort and do harm, splendid results will be obtained by applying continuous moist compresses of cheese-cloth wet with a 2 per cent. solution of boric acid and resorcin.

Another lotion of great value is one modelled somewhat after Burrow’s formula:

R. Liq. plumbi subacetat. dil. .... fʒj-ij;  
 Potassii et alumini sulphatis (alum) ..... gr. xxx;  
 Glycerini ..... fʒiv;  
 Aquæ camphoræ ..... fʒj;  
 Aquæ ..... q. s. ad fʒvj.—M.

A favorite treatment of J. C. White, of Boston, is the application of black wash (*lotio nigra*), either pure or diluted one-half with lime-water, followed by the use of the plain zinc oxid ointment.

*Soothing ointments* are often indicated in acute eczema. In some cases ointments of no character can be borne, because of the increased heat and irritation produced by them. Good results, however, will usually follow the use of sedative lotions during the day and mild ointments at night. It is a mistake to regard ordinary zinc ointment as inert and devoid of medicinal properties: it is extremely useful in early eczemas, particularly of the vesicular variety. Lassar's paste, consisting of one part each of zinc oxid and starch and two parts of vaselin, has greater consistency and does not tend to run so readily. To these salves as bases may be added five to ten grains of salicylic or phenic acid.

A very old remedy, still employed with good results, is the diachylon ointment of Hebra. It must be freshly prepared and should be applied upon strips of soft linen or muslin. It is made as follows:

R. Olei olivæ ..... f̄<sub>3</sub>xv;  
 Lithargyri..... ʒiij-v;  
 Aquæ..... q. s.—M.  
 Sig.—Coq. et ft. ung.

*Local Treatment of Subacute Eczema.*—When the stage of acute inflammation has subsided, more stimulating applications are desirable and necessary. For the relief of itching, always a troublesome symptom in eczema, we may use carbolic acid, tar, menthol, camphor, etc. Mercurial preparations are also useful as antipruritics; they, moreover, act admirably in controlling pyogenic infection of the skin.

We may employ, with excellent results, in a large variety of subacute eczemas, the following paste of phenol and calomel:

R. Acidi phenici ..... gr. x;  
 Hydrargyri chloridi mitis ..... gr. xv;  
 Pulv. amyli } ..... āā ʒij;  
 Pulv. zinci oxidi }  
 Vaselini..... ʒiv.—M.

This is one of the most generally useful formulæ in eczema that I know. Tar may be employed in this stage, but should be used rather weak in the beginning.

A lotion which enjoys an excellent reputation among English dermatologists is the "liquor carbonis ~~desti~~" or tincture of mineral tar. It is made by tar with nine ounces of tinc and then filtering. It is to

in water. I have for some time used a tincture of vegetable tar made with *pix liquida* instead of coal-tar. The following lotion will be found most valuable in subacute itching eczemas, particularly of the papular variety:

|                              |                   |
|------------------------------|-------------------|
| R. Tinct. picis liquidæ..... | f℥iv-f℥j;         |
| Acidi phenici.....           | gr. xxx-lx;       |
| Glycerini.....               | f℥iss;            |
| Zinci oxidi.....             | ℥ij;              |
| Ext. hamamelidis dest.....   | f℥j;              |
| Aquæ.....                    | q. s. ad f℥vj.—M. |

*Local Treatment of Chronic Eczema.*—In this stage the skin is thickened and infiltrated, and stimulating remedies are required to promote absorption of the cellular exudate and restore the integument to its normal condition. In some cases keratolytic substances to soften and remove thickened, horny epidermis are necessary.

Tar ointment finds its most important therapeutic scope in obstinate papular and thickened eczema. It should never be used in acute eczema, and only with caution in the subacute forms. Liquid tar and the oil of cade are the two best preparations; they may be incorporated in any ointment base:

|                                      |        |
|--------------------------------------|--------|
| R. Picis liquidæ or Olei cadini..... | ℥j-ij; |
| Zinci oxidi.....                     | ℥j.—M. |

In non-inflammatory leathery patches oil of cade with an equal part of olive oil may be rubbed in with advantage.

The "liquor picis alkalinus," suggested by Bulkley, is an excellent remedy in sluggish and thickened eczemas; it is freely miscible with water:

|                       |       |
|-----------------------|-------|
| R. Picis liquidæ..... | f℥ij; |
| Potassæ causticæ..... | ℥j;   |
| Aquæ.....             | f℥v.  |

SIG.—Dissolve the potash in water and add slowly to the tar in a mortar with friction. To be *diluted* twenty times or more.

An application much employed in Europe in the treatment of eczema is the glycerogelatin jelly of Unna; it is made up of—

|                |           |
|----------------|-----------|
| Gelatin.....   | 15 parts. |
| Glycerin.....  | 15 "      |
| Zinc oxid..... | 30 "      |
| Water.....     | 40 "      |

To the above may be added 5 per cent. of ichthyol or 2 per cent. of salicylic or carbolic acid. At the temperature of the

air this combination has the consistence of a firm jelly, which is heated upon a water-bath until it can be easily poured. A double boiler can be used, or an ordinary porcelain kitchen cup containing the medicament can be placed in a pipkin containing water. The melted material is then painted upon the skin, and the part covered with a thin layer of absorbent cotton. This becomes quite dry in about ten minutes, when the excess of cotton may be stripped off. A firm, impermeable covering is thus formed. It relieves itching admirably, probably by excluding the air. It is of particular value in subacute eczemas. The application will remain on the skin for one or two days before it begins to peel off.

*The soft soap and diachylon treatment* may be tried in circumscribed, sluggish eczemas of the leg when other remedies fail. The leg is briskly rubbed with the soap, which is then removed and followed by the application of the ointment on strips of muslin.

*Baths* are sometimes of value in eczema, although they should be employed with care. The most frequently used medicated baths are those containing bran, starch (one pound to the bath), borax, or soda (one-half pound to the bath). Sulphur baths are sometimes useful in chronic papular eczema. They can be prepared by adding two to three ounces of the liquor calcis sulphurata or Vleminckx's solution to 30 gallons of water.

*Rest* is a factor of considerable importance in treating eczemas upon dependent portions of the body, as, for instance, the legs. Many patients with eczema rubrum of the legs accompanied by venous stasis and swelling will make more improvement in three weeks in bed than in a similar number of months upon their feet.

**Special Treatment of Regional Eczema.**—*Eczema of the Scalp (Eczema Capitis).*—Eczema upon the scalp in infants and young children is apt to be of the pustular type; in school-children it is commonly due to animal parasites; in adults it is usually scaly, and of the seborrheic variety. Weak sulphur and mercurial ointments act well; thirty to forty grains of precipitated sulphur or twenty grains of ammoniated mercury in one ounce of benzoated lard or vaselin may be advised.

*Eczema of the Face (Eczema Faciei).*—The erythematous, vesicular, and weeping forms of eczema are the most common varieties seen upon the face. The lotions referred to in the treatment of acute eczema are appropriate for eczema in this

region. When there is much crusting, an oil lotion combining the advantages of a salve and wash may be employed with advantage:

R. Resorcini } .....āā 3j;  
 Acidi borici } .....f3ij;  
 Olei amygdal. dulc.....f3iv;  
 Aquæ calcis .....f3iv;  
 Pulv. zinci oxidi .....3ij.—M.  
 Sig.—Shake well and dispense in a wide-mouthed bottle.

The plain ointment of zinc oxid will often do more good than complicated combination of drugs.

*Marginal eczema of the eyelids*, or blepharitis, will usually respond to boric-acid instillations and an ointment of the yellow oxid of mercury, five grains to the ounce of vaselin. The same salve is useful in *eczema of the nostrils*. The patient should be cautioned against inserting the fingers into the nostrils. Eczema of the vermilion border of the *lips* often runs an obstinate course. Lotions of resorcin and boric acid and weak ointments of salicylic and boric acids in cold cream are useful. The same ingredients incorporated in a quince jelly frequently act well. Hyde and Montgomery advise equal parts of benzoin, alcohol, and glycerin. In chronic cases weak solutions of silver nitrate and caustic potash are sometimes serviceable. In eczema of the lips the subject of the dentifrices employed should be investigated.

*Eczema of the Hands and Feet (Eczema Manuum; Eczema Pedum)*.—The vesicular, the squamous, and the fissured varieties are the most common types upon the hands and feet. Eczema of the hands is frequently an occupation disease, as in washerwomen. The hands should be protected from heat and cold. In the vesicular forms good results are obtained with the phenol-calomel pastè, black wash, salicylic-acid salve (10 to 15 grains to the ounce), diachylon ointment, and similar remedies. I have found at times a 1 per cent. solution of picric acid promptly to relieve itching when other remedies had failed; this solution hardens the horny layer and reinforces the protective covering.

For the horny, thickened eczemas of the palms and soles the best remedy is a 25 per cent. salicylic acid plaster. A 5 to 10 per cent. salicylic acid-resorcin paste is also useful. Tar may also be employed with advantage. The wearing of rubber gloves will macerate and soften a thickened and horny eczema.

The *x-rays* are of great value in recurrent vesicular eczema of the hands and feet. Indeed, in no other variety of the disease is radiotherapy so uniformly successful. This treatment assures a greater permanence of cure than any other method. The rays should be used in conjunction with other approved measures. In scaly eczemas of the palm and soles the results are less certain.

*Eczema of the Bearded Region (Eczema Barbæ).*—The eruption is not, as a rule, circumscribed to the region of the beard and mustache, but extends upon the non-hairy areas. When the lesions are entirely limited to the hairy portions, differentiation from sycosis may be difficult. The two most common varieties in these regions are the pustular and the seborrheic forms. Mild remedies, such as are advised in acute eczema, are applicable in the early stages. Weak sulphur or mercurial ointments often act well. It is best in acute cases not to shave the beard, but to crop it closely with a curved scissors. When pustules are penetrated by hairs, the plucking of the latter effects an evacuation of the pus. In subacute and chronic cases shaving should be frequently performed.

*Eczema of the Nipples and Breast (Eczema Mammæ).*—This usually occurs in nursing women. The nipple is commonly reddened, thickened, fissured, and oozing. Each nursing causes the most exquisite pain. When cracks are present, the infant should suckle through an artificial rubber and glass nipple. In obstinate cases it may become necessary to wean the baby. The nipples should be gently cleansed with boric acid solution after each nursing. Mild lotions and protective ointments, such as a bismuth or zinc salve, may be applied between nursings. The ointments should be carefully removed with sweet oil. I have found painting with a dram to the ounce solution of ichthyol in water successful; before nursing this is to be removed with a lotion containing boric acid and glycerin. Poisonous ingredients should not be incorporated in the applications used.

*Eczema of the genitals (eczema genitalium)* occurs both in men and women. In the former the scrotum is most commonly involved, although the glans or the shaft of the penis may be the seat of the trouble. The erythemasquamous variety of eczema is most frequently encountered. The scrotum is reddened, thickened, scaly, and often fissured. The itching is violent, and leads to the most



coming only with abrasion and weeping of the surface. In women the labia majora and at times the labia minora and vestibule are reddened, thickened, and excoriated.

Glycosuria is a common cause of genital eczema in women; it is not so often productive of this condition in men. Many genital eczemas have their origin as a pruritus, the repeated scratching causing the eczema. The heat, moisture, and friction of this region favor the development of eczema. A constant sitting posture also conduces to eczema of the genitals, as is seen in tailors. Vaginal discharge often excites eczema labiorum.

The *treatment* often requires patience on the part of the physician and the sufferer. In acute eczema mild lotions are indicated: equal parts of lotio nigra and lime-water with a little carbolic acid and glycerin added often does well. One may also use the calamin lotion or a 2 per cent. solution of resorcin and boric acid. Very hot boric-acid fomentations give relief for a time from the distressing itching. In subacute or chronic cases the following lotion has given me good results:

|  |                                 |
|--|---------------------------------|
| R. Menthol . . . . .                               | gr. xx;                         |
| Acidi phenici . . . . .                            | gr. xxx;                        |
| Tinct. picis liquidæ or Tinct. picis mineralis . . | f $\frac{3}{4}$ ss-iss;         |
| Ext. hamamelidis dest. . . . .                     | f $\frac{5}{8}$ j;              |
| Glycerini . . . . .                                | f $\frac{3}{4}$ iss;            |
| Aquæ . . . . .                                     | q. s. ad f $\frac{5}{8}$ vj.—M. |

Weak bichlorid lotions, the tincture of benzoin, a 2 per cent. solution of silver nitrate in spirits of nitrous ether, may all be resorted to in obstinate cases. Diachylon, carbolic, and mercurial ointments are also at times useful. In a long-standing and obstinate genital eczema in a young woman under my care a brilliant and rapid cure was effected with the use of the *x-rays*. I have had similar successes in men.

*Eczema of the Legs (Eczema Crurum).*—The legs are the most frequent site of eczema in persons of middle or advanced years. Varicose veins and resulting venous stasis are commonly responsible for the lessened resistance in these parts. All forms of eczema may be encountered, but eczema rubrum usually with, but sometimes without, weeping is the commonest. The skin often has a purplish or bluish coloration, and later a brownish pigmentation. Ulceration, often the result of superficial venous thrombi, is a common complication.

The treatment does not essentially differ from that of eczema elsewhere. In severe acute cases rest in bed with elevation of

the leg is a most important consideration. Where varicose veins are present, bandaging is of great aid; in moist eczemas a firm and well-applied muslin roller-bandage should be used: where no moisture is present, a woven elastic strand bandage may be employed or an ordinary rubber bandage over muslin, or a white stocking.

*Eczema Liberorum.*—Eczema in children presents certain features, both as regards symptomatology and treatment, which merit special mention. The face and scalp are the favorite seats of the disease. The diaper region is also commonly affected, as the result of the too infrequent changing of the napkins, from the excessive use of soap and water, and, most frequently of all, from acid diarrheas.

The type of eczema usually seen upon the face is the vesicopustular: this is frequently transformed into a weeping eczema by scratching. Although eczema may last a long time in infants, it usually presents an acute appearance; this is doubtless due to the tenderness of the infantile skin and to noxious scratch effects.

A prominent cause of infantile eczema is disturbance of the gastro-intestinal tract. Improper diet and overfeeding are fruitful etiologic factors. Local causes, such as the prolonged contact of excreta, the use of irritant soaps, exposure to cold winds, are responsible for many cases. Dentition rarely causes an eczema, although it appears capable of aggravating an existing one. In my experience infantile eczema usually begins within the first six weeks or two months of life. Unless skilfully treated,—and at times despite such treatment,—it is apt to last for many months.

The treatment does not differ essentially from that of acute and subacute eczema in adults, save that the remedies employed should be very mild. There are no internal drugs of special value. The proper adaptation of the food to the nutrition of the child is of far greater importance. Where the infant is not at the breast, the selection of a proper milk combination is a most vital consideration. Some babies develop eczema when put upon an unsuitable food. When the mother is badly nourished or sick, even the maternal milk may prove an improper diet for the child. Excessive adiposity is regarded by some physicians as a cause of infantile eczema; in such cases it is said a reduction in the carbohydrates is followed by prompt improvement.

A matter of great importance is the prevention of scratching. When this cannot be accomplished by the use of masks and bandages, it must be effected by some form of physical restraint. Often it will suffice to place padded mittens or bags on the hands; in many instances it will be necessary to place splints upon the arms to prevent the child from scratching its face. The immobilization of the elbows may be conveniently accomplished by bandaging a paste-board cylinder around the arms or by simply fastening a pair of starched cuffs over the elbows with a heavy rubber band.

In obstinate infantile eczemas removal to the seashore or mountains will sometimes accomplish more than all other therapeutic measures.

#### **ECZEMA SEBORRHOICUM (DERMATITIS SEBORRHOICA)**

*Synonyms.*—Seborrheic eczema; Seborrhœa corporis.

**Definition.**—Eczema seborrhoicum is an inflammatory disease of the skin, beginning usually upon the scalp, and characterized by scaliness, redness, and fatty hypersecretion, with a tendency to downward extension.

**Symptoms.**—The disease almost invariably begins upon the scalp, to which it may be limited for a long period of time without exciting any special attention. The eczema has its origin in an antecedent seborrhœa capitis characterized by fine scaling. Either gradually or rapidly there may develop a marked increase in the scaling, loss of hair, or reddish patches associated with some itching. The scalp presents either diffuse or circumscribed reddening, covered with loosely attached greasy scales. The scales are softer and less adherent than in ordinary eczema, owing to the excessive fatty content. The reddish patches not infrequently extend beyond the hairy border upon the forehead, constituting the so-called corona seborrhoica. The patches are, as a rule, free of exudation save when artificially irritated.

The eruption is often seen behind the ears, and at times in the internal auditory canal. Yellowish-red and scaly patches are also seen upon the face, particularly about the hairy portions—the eyebrows, mustache, and beard. The nasolabial fold is a very common seat of the eruption.

From the scalp the disease may spread gradually, or more rarely rapidly, by the facial or postauricular route, to the trunk. Sometimes distant regions are affected, without the

presence of the eruption upon intervening areas. The sternal and interscapular regions are the favorite seats of the type described by Duhring as *seborrhæa corporis*. This variety is characterized by circinate or crescentic yellowish-red patches with oily scales.

The axillary, anal, and inguinocrural creases may exhibit dry or moist patches, often indistinguishable from an ordinary eczema.

The subjective symptoms in seborrheic eczema are not pro-



Fig. 24.—Seborrheic dermatitis of sternal region; favorite seat.

nounced. In many cases itching is entirely absent; it is usually proportionate to the grade of inflammatory reaction present.

In the localized forms of the disease—*i. e.*, those limited to the scalp, the nasolabial folds, the sternum, etc.—the eruption, untreated, persists for a long period. After disappearance under treatment the eruption commonly returns at a later period.

The acute, rapidly spreading, and highly inflammatory varieties are not so prone to recur.

**Etiology.**—Unna and Elliott both insist upon the parasitic nature of this disease. Unna found a mulberry-shaped coccus which he called the morococcus, and which he regarded as the cause of the disease. Merrill, working in collaboration with Elliott, found a diplococcus with which he claims to have reproduced the disease by inoculation. The prevailing view



Fig. 25.—Seborrheic dermatitis of rather unusual character, exhibiting circinate patches.

is that seborrheic eczema is a parasitic affection having, however, but a feeble contagiousness and requiring a favorable soil. Elliott regards an indoor life as a favoring condition. It is probable that all factors that lower the general resisting power or that of the skin aid in the production of the disease.

**Pathology.**—Both Unna and Elliott regard the process as a dermatitis of catarrhal character, caused by the invasion of a microorganism. Even ordinary dandruff or pityriasis capitis was found by Elliott to be characterized histologically by

inflammatory changes in the skin. Unna believes the fatty hypersecretion in seborrheic eczema to issue from the sweat-glands and not from the sebaceous glands. Elliott failed to confirm Unna's finding of fat in the sweat-coils, but noted their participation in the general inflammatory process.

**Diagnosis.**—Eczema seborrhoicum may be distinguished from ordinary eczema by its origin in the scalp, the tendency to downward extension, the absence of well-developed vesicles and pustules, the mild character of the inflammation, the



Fig. 26.—Severe and acutely inflammatory type of seborrheic dermatitis.

greasy character of the scales, the superficiality of the patches, the absence of marked infiltration, the tendency to crescentic or annular configuration, and the mild grade of the itching.

The affection may bear a close resemblance to *pityriasis rosea*, but the latter seldom, if ever, attacks the scalp; it, moreover, is often preceded by a primitive patch on the trunk or extremities. The lesions are often oval, the long diameter running parallel to the long axis of the ribs; the centers of the

lesions are fawn colored and covered with fine scales which, however, are not greasy. The itching is variable, often severe. Pityriasis rosea runs a rapid course, with spontaneous cure, in from six to eight weeks; this is not true of seborrheic eczema.

Some forms of the disease bear a remarkable similarity to *psoriasis*. The resemblance is closest in lesions upon the scalp. The distribution of the eruption in the two disease is, however, dissimilar. Patches about the elbows and knees bespeak a *psoriasis*. The lesions of seborrheic eczema lack the silvery scales of *psoriasis* and are distinctly more greasy.

**Treatment.**—The best remedies, in the order of their efficacy, are: sulphur, resorcin, salicylic acid, and ammoniated mercury. Upon the scalp it will be found most convenient to employ a lotion. The following is highly useful:

R. Resorcini ..... ʒij;  
 Olei ricini ..... fʒj;  
 Aquæ ..... fʒij;  
 Spirit. vini rect. .... fʒvj.—M.  
 Sig.—Apply each night.

Where an ointment and lotion are both used upon the scalp, it will be well to omit the oil from the lotion. I have often seen excellent results from the alternate use of the resorcin alcohol and an ointment containing:

R. Sulph. præcip. .... ʒj;  
 Adipis. .... ʒj;  
 Olei bergamot. .... ℥xxx.—M.  
 Sig.—Apply every night, rubbing well into the scalp.

I have met with some cases of patches on the face in which all ointments, no matter how mild, seemed to aggravate the condition. Lotions containing resorcin and boric acid were well borne. The glycerogelatin jelly of Unna, containing a little ichthyol or salicylic acid, does well in these cases.

In seborrheic eczema of the chest sulphur in vaselin, forty to sixty grains to the ounce, acts with magical rapidity. If the treatment is not continued, the patches are likely to return, particularly in warm weather.

Medicated soaps containing resorcin, salicylic acid, and sulphur are of considerable value on the scalp and trunk. They are often too strong for the face. In obstinate cases resort may be had to mercury, chrysarobin, or tar. Mild x-ray exposures have been very useful in my hands as auxiliary treatment.

## DERMATITIS REPENS

**Definition.**—Dermatitis repens is a spreading inflammation of the skin having its origin usually in an injury upon the upper extremities and advancing by a vesicular undermining of the epidermis. The disease was first described by Crocker in 1888.

**Symptoms.**—In practically all cases an injury, oftentimes trivial in character, is the starting-point of the eruption. Vesicles or bullæ appear at the site of the trauma, followed by a throwing off of the epidermis after their rupture. A red, raw, oozing surface is usually left, from the borders of which extension takes place by a serous undermining of the epidermis. Fresh vesicles and blebs may develop in the area beyond, or detachment of the epidermis may take place as a result of subjacent exudation. Sometimes the denuded surface remains dry. The condition is usually limited to the hand; but one of Crocker's cases extended up the arm, across the back, and down the other arm. The affection may last for weeks, months, or even years. Crocker believes the condition to be due primarily to a neuritis as the result of the injury and secondarily to bacterial invasion.

**Treatment.**—Crocker advises trimming away the partly detached epidermis and applying, once a day, a 10 per cent. solution of permanganate of potash. He also had success with a lotion of lactate of lead. Ointments of iodoform and aristol are also advised.

*Acrodermatitis perstans* is an allied disorder in which the fingers are successively affected by a vesicular or pustular eruption. The nails are altered and may be lost.

## IMPETIGO CONTAGIOSA

*Derivation.*—L., *impetere*, to attack.

**Definition.**—Impetigo contagiosa is an acute, contagious, inflammatory disease of the skin, characterized by discrete flat, superficial vesicles or blebs, which rapidly become pustular and dry upon the skin as thin crusts.

**Symptoms.**—The lesions begin as flat vesicles or blebs which, in the course of twenty-four hours or less, become vesicopustular or pustular. The vesicles vary in size from a pin-head to a pea or larger; they are not distended, but exhibit a wrinkled, flaccid appearance. The epidermal covering is so thin as to



permit rupture upon the slightest pressure. Usually there is no inflammatory areola. The contents dry up into a thin, wafer-like crust of a straw-yellow color. The edges of the crust become detached and curl up, and the crust has an appearance described by Tilbury Fox as "stuck on." Not infrequently the center of the crust is depressed, producing a sort of umbilication. When the crust is completely detached and thrown off, there is seen beneath a reddish spot, which disappears in the course of a few days.



Fig. 27.—Impetigo contagiosa.

The lesions are usually discretely scattered, but a coalescence of neighboring vesicles may lead to the formation of patches of considerable size. Sometimes the lesions, particularly under the influence of an irritant application, spread by peripheral extension, the advancing border being preceded by a vesicular epidermic undermining, until a patch the size of a silver quarter-dollar is produced.

The eruption ordinarily is limited to the exposed surfaces—

the face, neck, and hands. Other parts of the body may become affected, particularly in infants. The contents of the lesions are autoinoculable and new vesicles develop constantly from digital inoculation.

Occasionally the eruption takes on a circinate, annular, gyrate, or serpiginous form. Crocker calls this variety *impetigo contagiosa gyrata*.

In some cases the lesions consist of blebs, varying in size from a pea to a cherry (*impetigo contagiosa bullosa*). Bullous impetigo occurs at times in infants and may become epidemic in institu-



Fig. 28.—*Impetigo contagiosa bullosa*

tions. It is accompanied by fever and often ends fatally. Some of these cases have been called acute contagious pemphigus.

*Impetigo simplex* is a name given by Duhring to a form of impetigo that differs from the usual type in that the lesions are primarily pustules, have thick walls, are globular, and do not lead to rupture, coalescence, or umbilication. This form is said to be non-contagious. The *tenes* and *staphylococci* are appropriate. The *impetigo of Bockhart* is peculiar. The alleged peculiarity of the

are penetrated by hairs and have, therefore, their seat at the mouth of a hair-follicle.

Impetigo complicates nearly all cases of severe small-pox during the stage of decrustation. It is also seen at times in chicken-pox. The terms *impetigo variolosa* and *impetigo varicellosa* appear appropriate for these conditions.

**Etiology.**—The disease appears to be caused by inoculation with the germs of contagious pus. It is readily transmissible from one individual to another through accidental inoculation. Formerly the affection was seen almost exclusively in children of the poorer classes; it is not so rare now to observe cases in



Fig. 29.—Impetigo contagiosa contracted in a barber-shop.

adults. Barber-shop transmission is a fertile source of the disease in men. I have observed the disease develop in twenty men who occupied the same barber's chair on two successive afternoons. The infection was in all probability transferred to the strap, and from this, each time, to the razor.

Pediculosis capitis, with its consequent scratching, is frequently causative. In my experience the variety associated with pediculosis is not apt to be primarily vesicular, and does not appear to be very contagious. Purulent discharges from the eyes, nose, and ears produce similar lesions. The lesions are disseminated by digital inoculation.

**Pathology.**—Unanimity of opinion does not exist as to the character of the exciting organism. Sabouraud and certain other investigators have found the streptococcus in pure culture or associated with the staphylococcus; others have observed only the staphylococcus aureus. It is quite possible that the primarily vesicular and actively transmissible form is due to



Fig. 30.—Impetigo contagiosa annulata et serpiginosa. A very rare distribution.

the streptococcus and the pustular form, resulting from pyogenic infection, to the staphylococcus.

**Diagnosis.**—Impetigo is to be differentiated from pustular eczema, varicella, and perhaps pemphigus. The discreteness, superficiality, flaccidity, and inoculability of the vesicles are distinguishing characteristics. *Pustular eczema* occurs in patches with a reddened base, is itchy, and does not yield so promptly to treatment. *Varicella* is characterized by smaller vesicles with reddish areolæ: it prefers the covered surfaces,

frequently attacks the mouth, and is ushered in with fever. *Pemphigus* is a serious chronic disease, characterized by large, distended blebs, the contents of which are not inoculable.

**Prognosis.**—The disease is readily curable in one to three weeks.

**Treatment.**—The crusts when bulky should be anointed with vaselin and then gently removed with soap and water. Ammoniated mercury or calomel, five to twenty grains to the ounce of vaselin or zinc ointment, should then be applied. To prevent autoinoculation the fingers should be kept away from the face



Fig. 31.—Impetigo varicellosa, due to secondary pyogenic infection (Welch and Schamberg).

and the following lotion applied frequently, preferably from an atomizer:

|                             |          |
|-----------------------------|----------|
| R. Hydrarg. bichlorid ..... | gr. j;   |
| Glycerini .....             | fʒj;     |
| Aquæ .....                  | fʒij.—M. |

It is well to apply the lotion during the day and the ointment at night. Too strong or irritating applications should be avoided, as they sometimes cause spreading of the eruption.

**IMPETIGO HERPETIFORMIS**

*Synonym.*—Herpes pyæmicus.

**Definition.**—An inflammatory disease of the skin, characterized by the appearance of miliary pustules arranged annularly or in clusters, attended by constitutional disturbance, occurring usually in puerperal women, and generally fatal.

**Symptoms.**—The lesions begin as small, superficial pustules, which come out in successive crops and are arranged in groups which heal in the center and spread by peripheral extension, often producing annular patches. In the course of several months the eruption may become universal. Elevation of temperature and chills accompany each outbreak. Dry tongue, vomiting, diarrhea, albuminuria, and delirium are apt to supervene and death result. The anterior surface of the trunk, the thighs, and inguinal regions are the seats of predilection. The disease is very rare.

**Etiology.**—The vast majority of cases have been observed in pregnant women. The process is looked upon as pyemic or septicemic in character.

**Prognosis.**—The disease is extremely fatal. A few cases have recovered.

**Treatment.**—General supportive treatment, such as is employed in pyemic and septicemic conditions, is indicated.

**ECTHYMA**

*Derivation.*—*Ἐκθημα*, a pustule.

**Definition.**—The term ecthyma is applied to an eruption characterized by discrete, flat, deep-seated pustules with broad inflammatory bases. Many dermatologists no longer look upon ecthyma as a distinct disease, but rather as a form of dermic pus-infection. The legs and thighs are the seats of predilection, although the trunk is occasionally attacked.

**Symptoms.**—The lesions begin as small, pea-sized pustules, which rapidly increase in size until the diameter of a centimeter is attained. They are discrete, flat, and surrounded by a markedly reddened and often infiltrated zone. When rupture takes place, an irregular yellowish or brownish crust is formed, beneath which suppuration goes on. Pigmentation or superficial scarring may persist after the disappearance of the lesions. A rare form of the disease, known as *ecthyma gangræn-*

*osum*, is sometimes encountered in poorly nourished children, or after an attack of one of the exanthemata. In such cases the buttocks, thighs, or inguinal region is usually attacked.

**Etiology and Pathology.**—Debility, bad food, and improper hygiene are said to play an important predisposing rôle. The eruption attacks adults rather than children. The exciting cause is, in all probability, the introduction of a microörganism into the cutaneous follicular openings. It is evident that scratching would greatly facilitate such an inoculation.

**Diagnosis.**—Ecthyma is to be differentiated from contagious impetigo, pustular eczema, and the large, flat, pustular syphiloderm.

#### ECTHYMA.

1. Seat of predilection, the legs.
2. Primarily pustular.
3. Pustules deep.
4. Marked inflammatory areola.
5. More common in adults.
6. Non-contagious.

#### IMPETIGO CONTAGIOSA.

1. Face and hands.
2. Primarily vesicular.
3. Pustules superficial.
4. No inflammatory areola.
5. More common in children.
6. Contagious.

#### ECTHYMA.

1. Seat of predilection, the legs.
2. Pustules discrete.
3. Pustules large and flat.
4. Red and infiltrated areola.
5. More common in adults.

#### PUSTULAR ECZEMA.

1. Indefinite localization.
2. Grouped, often coalescing.
3. Small and round or acuminate.
4. No inflammatory areola.
5. More common in children.

Ecthyma may be distinguished from the *pustular syphiloderm* by the more inflammatory character of the lesions, the absence of true ulceration, the distribution of the lesions, and the absence of other signs of syphilis.

**Prognosis.**—The affection responds satisfactorily to appropriate treatment.

**Treatment.**—Tonics, good food, and improved hygiene are to be advised. The local treatment consists of the removal of the crusts and the application of an ointment, such as the following:

R. Ichthyol. .... ℥xxx-3j;  
Hydrarg. ammoniat. .... gr. xx;  
Ung. zinci oxid. .... 3j.—M.

## DERMATITIS HERPETIFORMIS

*Synonyms.*—Duhring's disease; Hydroa; Herpes gestationis.

**Definition.**—Dermatitis herpetiformis is an inflammatory disease of the skin, characterized by grouped, erythematous, papular, vesicular, pustular, or bullous lesions, occurring in varied combinations, accompanied by burning and itching



Fig. 32.—Dermatitis herpetiformis in a fourteen-year-old girl. Recurrent attacks. Eruption each time amenable to treatment with arsenic.

and running a chronic course with remissions. According to Duhring, more or less well-defined prodromata, consisting of malaise, chilliness, febrile disturbance, and constipation, are apt to precede the cutaneous outbreak in severe cases.

**Symptoms.**—Itching may be complained of before the eruption appears. The eruption may appear gradually or suddenly; often within a few days it has covered a considerable area.

The erythematous, vesicular, bullous, pustular, and multi-form eruptions are the common varieties of the disease. There is a distinct tendency for one variety to pass into another variety—for instance, the vesicular form may become pustular or bullous, or the pustular form may become bullous. Burning and itching are prominent in some cases are intense.



*Erythematous Variety.*—This form occurs in marginate patches or diffuse efflorescences resembling erythema multiforme. Urticaria-like, edematous infiltrations may also occur. The color may be raspberry-red, mottled, and tinged with yellowish, brownish, or variegated, with later a variable degree of pigmentation. Erythematopapular and vesicular lesions often coëxist. Itching and burning are marked.

*Vesicular Variety.*—This is the most common form. It is marked by pin-head- to pea-sized, flat or raised, irregularly shaped or stellate, distended vesicles, frequently without an inflammatory areola. They are usually aggregated in clusters of three or four lesions. They tend often to coalescence, but not to rupture. Itching is severe, often intense, but abates considerably upon rupture or laceration of the vesicles. The eruption comes out in crops, which often succeed each other with great rapidity.

*Bullous Variety.*—The lesions consist of distended, irregular-shaped, angular bullæ, occurring in groups of three or more, often without areola. Small pustules frequently appear in the neighborhood, and erythematous and vesicular lesions may likewise be present. Itching and burning are severe.

*Pustular Variety.*—Two kinds of pustules appear: the one small (miliary), pin-point- to pin-head-sized, and perfectly flat; the other large, elevated, rounded or acuminate, and situated upon an inflammatory base. There is a tendency to arrangement in clusters of three or four. Vesicles and blebs may complicate the eruption, although the pustular type often remains as such, even throughout successive outbreaks. Papular lesions remaining as such occur with great variety.

*Papular Variety.*—This variety is the mildest expression of the disease. More commonly, papulovesicles resembling abortive herpes lesions develop.

*Multi-form Variety.*—This is a polymorphous form, in which erythematous patches, papules, vesicles, blebs, pustules, and pigmentation, in various combinations, are commingled.

The course of dermatitis herpetiformis is variable, but in nearly all cases is eminently chronic, lasting for years in the form of relapses, or, indeed, at times continuously. Commonly a few lesions persist during the periods of relative freedom.

**Etiology.**—The disease occurs most often between the ages of thirty and sixty. It is due to various causes, among which may be mentioned physical or psychic shock, pregnancy, dis-

ordered menstruation, puerperal septicemia, gastro-intestinal disorders, and renal insufficiency; the nervous system, however, is directly responsible for the cutaneous manifestations. There is in most cases a lowering of the general nerve-tone.

**Pathology.**—There is an acute inflammation of the papillary layer of the corium, with the formation of vesicles between the corium and epidermis and the exudation of large numbers of polymorphonuclear leukocytes and eosinophiles. The epidermis is but secondarily involved. Eosinophilia is present in the vast majority of cases; it is not, however, peculiar to this disease.

**Diagnosis.**—The polymorphism and herpetiformity of the eruption, the intense itching, and the history, course, and chronicity of the disease will enable one to distinguish it from pemphigus, erythema multiforme, and impetigo herpetiformis—diseases which it at times closely resembles.

The vesicles and blebs of dermatitis herpetiformis are peculiar in that they are often of markedly irregular outline—sometimes stellate, quadrate, or oblong, etc. In drying they are apt to present a puckered appearance.

They are herpetiform in that they occur in groups, have inflammatory bases, and do not tend to spontaneous rupture, resembling in these respects the lesions of herpes zoster.

**Prognosis.**—Guarded. The disease is often persistent and refractory to treatment. In addition, there is a strong tendency to recurrence. In rare cases the pustular or bullous type may prove fatal.

**Treatment.**—The first effort should be directed toward the removal or modification of the underlying cause, if ascertainable. The nervous system is in most cases at fault, and remedies should be administered with a view to restoring the normal nerve-tone. There are no specifics, but arsenic often acts in a gratifying manner. In several cases of the vesicular and bullous variety under my care the eruption could be completely controlled by the use of arsenic in fairly large doses. It should be given in ascending doses by mouth, if well borne; if not, hypodermically until an impression is made upon the disease or upon the patient. In other cases, however, it is of no value. Phenacetin, cannabis Indica, and belladonna may be tried, and such tonics as quinin, strychnin, and iron are sometimes of value.

*Local Treatment.*—Blebs should be incised or punctured and

the contents evacuated. Lotions containing tar, carbolic acid, ichthyol, and resorcin are useful. They may be followed by an ointment of salicylic acid. Duhring advises in the vesicular and pustular forms (particularly the chronic) the use of a strong sulphur ointment, well rubbed in.

### PEMPHIGUS

*Derivation.*—Πέμφις, a blister.

**Definition.**—Pemphigus is an acute or chronic inflammatory disease of the skin, characterized by the formation of successive crops of variously sized, rounded or oval blebs, affecting seriously the general health and often terminating fatally.

**Symptoms.**—There are two principal types of the disease—pemphigus vulgaris and pemphigus foliaceus. Some authors add pemphigus vegetans and pemphigus neonatorum.

*Pemphigus Vulgaris.*—The cutaneous outbreak is usually, though not always, preceded or accompanied by some systemic disturbance consisting of chills, fever, malaise, etc. The blebs may appear upon previously pale skin or a reddish spot may indicate the site of the developing blister. The lesions vary in size from a pea or a hazel-nut to a walnut or larger. They rise abruptly from the skin, and while having at times a slightly reddened base, have no areola. They are usually round or oval in shape. The blebs are distended with a clear, serous fluid, which later becomes turbid or even puriform. At times a reddish tint develops as a result of some hemorrhage into the bleb.

The eruption occurs in crops which may recur from time to time for an indefinite period. Each outbreak is apt to be accompanied by renewed febrile symptoms. The number of lesions may vary from a half-dozen to several score. The bullæ persist from three or four days to a week or longer, the fluid disappearing by absorption if accidental rupture does not take place.

The parts most affected, in the order of their frequency, are the limbs, the face, and the trunk. The mouth, vagina, conjunctiva, and other mucous membranes may become involved.

The disease in some cases runs a more or less acute course, getting well in a few months. Far more frequently, however, it persists for years, greatly impairing the general health.

*Pemphigus Acutus*.—There is an acute form of pemphigus (so called) which runs a rapid and usually febrile course, terminating in death or recovery within a fortnight to a month. The more favorable cases occur in children and are rare.

Within recent years a number of malignant and fatal cases have been reported, more particularly in England, in butchers and others coming in contact with animals, who have suffered some trivial wound. The blebs develop in a week to a month, appearing first, as a rule, in the neighborhood of the wound, which is commonly on the hand. Subsequent research will doubtless prove these cases to be due to a direct parasitic infection, entitling the affection to be regarded as a disease *sui generis*.

A number of writers have described a form of the acute disease appearing in infants a short time after birth, and



Fig. 33.—Pemphigus—distended blebs.

frequently occurring in epidemics in institutions; to this variety the term *pemphigus neonatorum* has been applied. It is probable that many of these cases are really instances of bullcus impetigo, for contagion appears to play the essential rôle.

*Pemphigus Foliaceus*.—This variety may develop from common pemphigus or may appear primarily as a distinct type. In this form the blebs, which are flaccid and purulent, rupture before distention and dry to crusts, which are thrown off with the surrounding epidermis, exposing to view the reddened mucous layer. A new crop of blebs succeeds the old, often developing upon the same site, and giving to the skin the appear-

ance of a severe scald. The entire cutaneous surface may thus become involved and the general health seriously compromised. The process lasts for months or years, and almost always leads to a fatal termination, often through complications of the intestinal or respiratory mucous membranes.

Neumann has described a rare form of pemphigus characterized by the development of wart-like or papillary vegetations



Fig. 34.—Bullous dermatitis closely allied to acute pemphigus. Eruption completely controllable by arsenic in sufficient dosage.

upon the sites of ruptured bullæ. This form he has called *pemphigus vegetans*. The mouth, vagina, or other mucous membranes are often first affected. The favorite situations upon the skin are the genital and anal regions, the neck, axillæ, and flexures of the extremities. The affection may be rapidly fatal or may last for months, ultimately terminating in death.

The subjective symptoms in pemphigus are usually not

pronounced. There may be moderate itching and burning, and in some cases tension and soreness.

Pemphigus is a rare disease. In this country about one case is seen among every 700 of miscellaneous skin diseases. Many bullous affections that should be classed elsewhere are called pemphigus by those unskilled in diagnosis.

**Etiology.**—The causes of pemphigus are involved in obscurity. The disease has been observed in many cases in which marked changes in the central and peripheral nervous systems were noted. In addition, chilling of the body, mental strain, nervous exhaustion, and a lowered or vitiated state of the general health are considered to be causative. A number of acute cases have occurred after wound infections; it is probable that the organism of sepsis may be causative. The action of toxins from various sources on nerve structure appears to explain best the phenomena of the disease.

**Pathology.**—The blebs are usually situated between the horny layer and the rete mucosum, but may occur at any depth in the epidermis. The contents of the bullæ consist of a slightly alkaline serum containing a few leukocytes. There are dilatation of the papillary vessels and a leukocytic infiltration of the papillæ, corium, and subcutaneous tissue.

Demmè, Whiphouse, and others have found diplococci in the contents of blebs; the former also noted their presence in the blood. A high-grade hemic eosinophilia is commonly observed.

**Diagnosis.**—It must be recognized at the outset that every bullous eruption does not constitute pemphigus. A clear conception of the disease would lessen the liability to error. The essential features of the disease are the development of crops of blebs distended with serum, springing up from the healthy integument *without* any pronounced areola, and running a chronic course with recurrences. In *dermatitis herpetiformis* there is much greater itching, the lesions are polymorphous, there is pronounced tendency to grouping, and the general health is not much compromised. *Erythema multiforme* runs an acute course, prefers the extensor surfaces of the extremities, exhibits multiform lesions, and the blebs, when present, rise from an erythematous base. In the bullous form of *contagious impetigo* a history of contagion, the inoculability of the fluid, and the presence, somewhere on the surface of typical lesions, will enable one to recognize the picture. Blebs may occur in syphilis, leprosy, urticaria, etc., but these diseases are easily differentiated.

**Prognosis.**—The course of the disease is uncertain. Mild cases may recover after a duration of months. Severe cases, particularly pemphigus foliaceus and pemphigus vegetans, are apt to end fatally. The occurrence of flaccid or hemorrhagic blebs, extensive cutaneous involvement, frequent outbreaks, or constitutional depression are all unfavorable signs.

**Treatment.**—Both internal and local treatment are to be employed, the former alone, however, being curative. Arsenic is by far the most valuable remedy. It is to be perseveringly tried, beginning with small doses and increasing until the physiologic limit is reached. Quinin in full doses is also of value, as are at times iron, strychnin, and cod-liver oil. Nutritious food, good hygiene and bodily and mental rest are important therapeutic factors.

Local treatment is designed to heal the abraded surfaces and to relieve the subjective symptoms. The blebs should be evacuated, and simple dusting-powders, ointments, or lotions applied. The calamin lotion is a most grateful application. Bran and starch baths are useful in extensive cases. In grave forms of pemphigus the continuous warm bath is perhaps the best treatment, the patient living day and night for weeks and months immersed in water.

### EPIDERMOLYSIS BULLOSA HEREDITARIA

*Synonyms.*—Congenital traumatic pemphigus; Acantholysis bullosa.

Epidermolysis bullosa is a rare disease, characterized by the rapid formation of blebs of various size following the slightest traumatism. The disease usually develops in infancy or early childhood and persists until late in life. There is in most cases a distinct history of heredity; in some instances the tendency is transmitted through several generations. In Bonaiuto's case the disease manifested itself in five generations. Valentine reported eleven cases occurring in four generations. Not all cases, however, give a hereditary history. In early infancy or childhood it is noted that the slightest physical violence, such as the pressure of a shoe, the weight of the elbow on the table, the friction of clothing, the grasping of a firm object, is capable of determining the rapid formation of a bleb. The bullæ vary in size from a pea to a silver dollar; they are irregular in shape, and often of a claret color, due to hemorrhage into the fluid

contents. The disappearance of the bleb is often followed by a certain degree of atrophy of the skin.

The areas attacked are those most subject to injury, such as the hands, feet, elbows, knees, anterior surfaces of the legs, etc. The finger-nails are often permanently lost as a result of involvement of the matrices of the nails. The skin of the



Fig. 35.—Epidermolysis bullosa. No hereditary history. Photograph shows sites of former bullae, loss of finger-nails, and atrophy of the skin.

fingers is, at times, furrowed and atrophic. In the patient shown in the accompanying photograph superficial ulcerations occurred upon the legs at the sites of ruptured blebs.

The **etiology** and **pathology** are both obscure. It is believed that there is an excessive sensitiveness of the vasomotor nerves and blood-vessels of the skin. Elliott described degenerative



changes in the rete mucosum just above the basal layer. Engman and Mook have noted the absence of elastic tissue.

**Treatment** thus far has been of no avail. I used the x-rays over the affected areas in a patient without any permanent improvement.

### POMPHOLYX

*Derivation.*—Πομφόλυξ, a bubble. *Synonyms.*—Cheiropompholyx; Dysidrosis.

**Definition.**—Pompholyx is an acute inflammatory disease of the skin, characterized by the development of numerous hard, deep-seated vesicles upon the hands and feet, and occasionally upon contiguous surfaces.

**Symptoms.**—The affection attacks symmetrically the hands and feet, although the latter may escape involvement. When the hands are involved, closely aggregated, deep-seated, tense vesicles are seen upon the lateral aspects of the fingers and upon the palms. They have been aptly likened to boiled sago-grains embedded in the skin. A feeling of heat, burning, tingling, or itching is nearly always present. The vesicles may remain discrete or may coalesce and form bullæ; these sometimes reach the size of a cherry or larger. The fluid often becomes absorbed, and the vesicles and blebs dry up in the course of a few days or a week. New lesions may, however, continue to appear, the surrounding skin becoming sodden and painful, later exfoliating. There is not infrequently an accompanying hyperidrosis. Recurrences are quite common, particularly in the warm months; the different attacks vary greatly in intensity. Constitutional symptoms are, as a rule, absent.

**Etiology.**—The affection is most common in early and middle adult life; it is more frequent in women than in men. The disease is especially observed in persons whose nervous system is lowered in tone. Overwork, loss of sleep, excessive worry, etc., may precipitate attacks.

**Pathology.**—The disease is generally regarded as a vasomotor neurosis. Tilbury Fox, Crocker, and others believe that the lesions are in anatomic relation with the sweat-structures; on the other hand, Hutchinson, Robinson, and their followers declare that the disease does not involve the sweat-apparatus, but is an inflammatory dermatosis related to herpes and pemphigus. The clinical phenomena rather support the former view. The vesicles and blebs lie in the lower layers of

the rete mucosum; their contents are of neutral or alkaline reaction.

**Diagnosis.**—Kaposi held that the disease was in reality an acute eczema. There are many cases in which it is most difficult to differentiate this disease from *vesicular eczema* of the hands, and some cases in which a typical pompholyx of the hands is associated with eczema in other regions. The following are the most important points: the circumscription of the lesions to the lateral digital and palmar surfaces, the tendency of the vesicles to persist unruptured, the absence of surface discharge, the mild grade of the inflammatory reaction, the predominance of burning over itching, and the course of the disease.

**Prognosis.**—Ordinary attacks are usually well at the end of a fortnight. Recurrences are extremely common.

**Treatment.**—The general health of the patient requires careful attention. Good hygiene and nutritious diet are important considerations. Tonics, such as arsenic, iron, strychnin, quinin, and cod-liver oil, are often indicated. Locally, the following formula may be employed:

|    |                   |   |                |
|----|-------------------|---|----------------|
| R. | Acidi salicylici  | } | .....ãã gr. x; |
|    | Acidi phenici     |   |                |
|    | Pulv. amyli       | } | .....ãã ʒij;   |
|    | Pulv. zinci oxidi |   |                |
|    | Vasellini         |   | ʒiv.—M.        |

Saturated solution of picric acid often does well, followed after a few days by a mild ointment. Diachylon ointment, oleate of zinc, and similar remedies are at times useful. I have found the *x*-rays of value in persistent or recurrent cases.

#### HYDROA VACCINIFORME (HYDROA AESTIVALE)

**Synonyms.**—Recurrent summer eruption (Hutchinson); *Hydroa puerorum* (Unna).

**Definition.**—This is a recurrent vesicular affection of childhood, occurring chiefly in the summer months and prone to produce scars.

**Symptoms.**—The disease begins usually during the first few years of life, and tends to disappear at or about puberty. The lesions develop particularly upon the exposed surfaces, such as the face. At first spots, with accompanying burning, increasing in size from a pin-

head to a pea, spring up; the vesicles may dry up, form crusts, or may acquire a ringed vesicular or pustular border and depressed center, resembling a vaccine lesion. In the last-named form the central crust, when thrown off, discloses to view a reddish scar, which ultimately becomes white. In some cases extensive scarring may be produced.

The eruption develops in crops in the summer months; during the winter the eruption is in abeyance, save in excep-



Fig. 36.—Hydroa aestivale.

tional cases, in which it may be worse during the cold period. It is thought that the heat-rays of summer and occasionally the cold winds of winter are responsible.

**Treatment.**—The results of treatment are in general unsatisfactory. The face should be protected from the solar rays and from the impact of winds. Mild applications, such as the calamin lotion, are useful.

## HERPES SIMPLEX

*Derivation.*—Ἑρπειν, to creep. *Synonyms.*—Fever-blister; "Cold sore."

**Definition.**—Herpes simplex is an acute, inflammatory disease of the skin, characterized by the formation of small groups of closely aggregated vesicles upon reddened bases.

**Symptoms.**—There are two chief varieties, according to localization: (1) *herpes facialis* and (2) *herpes genitalis*.

*Herpes facialis* has its favorite seat near the oral commissures and upon the lips (*herpes labialis*), although it may occur anywhere upon the face, neck, or ears. Herpetic lesions may also appear upon the tongue and the buccal mucous membrane, where they are called by the laity "canker sores." When



Fig. 37.—Herpes labialis.

associated with fever, the condition is commonly called *herpes febrilis*. The lesions consist of closely aggregated pin-head-sized and larger vesicles, which, through coalescence, often form flat blebs. The lesions are grouped in distinct clusters, which are seated upon an inflammatory base. The vesicles become pustular, rupture or desiccate, and are converted into yellowish or brownish crusts. Red stains are often left after detachment of the crusts and occasionally slightly depressed scars.

The clusters sometimes appear in crops at an interval of twelve or twenty-four hours. Burning and itching are often present. Not infrequently there is a marked <sup>+</sup> remission. Some patients suffer attacks of ~~fac~~ or more times a year.

*Herpes genitalis* (*herpes progenitalis* or *præputialis*) occurs both in males and in females. The groups of vesicles in the former are located upon the inner surface of the prepuce, upon the glans penis, or upon the shaft of the penis. In women the favorite seats are the labia majora and minora and the vestibule. In these locations they may, through subsequent infection, become the sites of chancres or chancroids.

**Etiology.**—*Herpes facialis* may result from gastro-intestinal derangement, coryza, and many infectious processes. It occurs in about one-third of all cases of pneumonia and malaria, and in almost one-half of the cases of cerebrospinal meningitis. In



Fig. 38.—Herpes simplex; a rather unusual location.

influenza it has been found in about 6 per cent. of the cases. In typhoid fever and in the exanthemata it is relatively rare.

Rolleston found simple herpes in 3 per cent. of cases of diphtheria and in 12 per cent. of cases of pseudodiphtheria.

The impact of cold winds and, on the other hand, strong solar rays appear capable in some individuals of exciting repeated attacks.

In herpes genitalis a long and adherent prepuce is alleged to act as a predisposing cause. Excessive genital irritation is

regarded as causative in many instances; it is more common in prostitutes than in chaste women.

**Pathology.**—The structural nerve changes in herpes simplex are not definitely determined, but recent studies would indicate that they closely resemble those found in herpes zoster. Howard, of Cleveland, found in a case of facial herpes profound changes in the Gasserian ganglion. It is probable that the attacks accompanying infectious processes are due to the influence of a toxin upon nerve-structures. Certain diseases seem to produce such an "herpetogenic" toxin more readily than others.

**Prognosis.**—The eruption spontaneously disappears, but some patients are subject to recurrences.

**Treatment.**—In recurrent cases the long-continued use of small doses of arsenic has been advised. Where the face is repeatedly attacked, protection of this part from cold winds by the use of a veil should be counseled.

In herpes genitalis thorough cleanliness and the avoidance of sexual excitement are indicated. In both forms the following lotion will be found useful in expediting the disappearance of the lesions:

|                    |                    |
|--------------------|--------------------|
| R. Resorcin. ....  | 5j;                |
| Acidi borici ..... | 5j;                |
| Glycerini .....    | ℥xl;               |
| Zinci oxidi .....  | 5ij;               |
| Alcoholis .....    | f 5j;              |
| Aquæ .....         | q. s. ad f 3vj.—M. |

## HERPES ZOSTER

*Derivation.*—Ἑρπειν, to creep; ζώνη, a girdle. *Synonyms.*—Shingles; Zoster; Zona; Cingulum.

**Definition.**—Herpes zoster is an acute inflammatory disease of the skin, characterized by the formation of grouped vesicles over the area of distribution of cutaneous nerves, and accompanied by neuralgic pains.

**Symptoms.**—After prodromal neuralgic pains, more or less severe in character, there appear in crops irregular groups of pin-head-to pea-sized vesicles, which follow in an interrupted manner the distribution of the nerve or nerves affected. When seen early, macules, papules, or papulovesicles may sometimes be distinguished. The vesicles rest upon a highly inflammatory base. The eruption is distinctly unilateral, bilateral cases being of great rarity.

In the course of some days the vesicles, which do not tend to spontaneous rupture, dry upon the skin as yellowish-brown crusts and fall off. As a rule, no permanent trace is left, although in some cases there may be considerable scarring. The vesicles may become pustular, hemorrhagic, or even gangrenous. There is nearly always enlargement of the neighboring lymphatic glands.

The most frequent regions affected are those supplied by the intercostal, lumbar, and trifacial nerves, although any portion of the cutaneous surface may be involved. In *herpes zoster*



Fig. 39.—Severe herpes zoster, involving the neck, chest, and upper portion of the back.

*ophthalmicus* severe destructive inflammation of the cornea, iris, and, indeed, of the entire eye, may occur in rare cases.

*Pain* is nearly always present. It may be slight or so severe as to prevent sleep. It is variously described as of a darting, burning, drawing, or tugging character. It may, especially in elderly people, persist indefinitely after the disappearance of the eruption, and may prove most refractory to treatment.



Fig. 40.—Herpes zoster supra-orbitalis. Sharp margination of disease at median line of forehead. Unusual amount of crusting present.



Fig. 41.—Herpes zoster following an unsuccessful vaccination.



In rarer instances persistent itching in the affected areas may continue after the disappearance of the eruption. In children, the pain is usually slight or absent.

In severe cases febrile disturbances may be present. Herpes zoster seldom occurs twice in the same individual. There are a number of recurrent cases on record, many of which, however, present peculiar features and are not typical cases.

**Etiology.**—The disease is said to occur more frequently in winter and spring, although my own personal experience does not indicate any special seasonal tendency. Of 156 cases observed at the Polyclinic Hospital during the course of about eight years, the monthly incidence has been as follows:

|               |            |                |     |
|---------------|------------|----------------|-----|
| January.....  | 13         | July.....      | 19  |
| February..... | 15         | August.....    | 10  |
| March.....    | 12         | September..... | 13  |
|               | 40         |                | 42  |
| April.....    | 11         | October.....   | 12  |
| May.....      | 8          | November.....  | 16  |
| June.....     | 16         | December.....  | 11  |
|               | 35         |                | 39  |
|               | Total..... |                | 156 |

Atmospheric changes, exposures to wet and cold, mechanical violence to nerve structure (such as may result from injury, surgical operations, pressure of tumor, etc.), are all considered causative. The long-continued use of arsenic has produced typical zoster in a considerable number of cases. Herpes zoster may be associated with pleuritic and pulmonary affections. Curtin and Watson and others have observed zoster occurring during the course of influenza; malaria may likewise act as a cause. Neligan, Kaposi, Weis, and others have noted apparent epidemicity of the disease. It seems probable that herpes zoster, when not traumatic, is an infectious process, due to the action of toxins developed from varied sources.

**Pathology.**—Zoster is due essentially to an irritative or inflammatory lesion of sensory nerve structure in any part of its course from the spinal cord to the integument. Commonly, the sensory ganglia on the posterior roots of the spinal cord are affected, or their analogue, the Gasserian ganglion. Head and Campbell describe the process as an acute posterior poliomyelitis. In such cases a descending interstitial neuritis develops.

In other cases there may be a simple inflammation of the peripheral nerves.

In the cutaneous lesions during vesiculation a peculiar epithelial degeneration occurs, which Unna has described as "ballooning" and "reticulating colliquation." This process is similar to that seen in the vesicles of small-pox and chicken-pox. Peculiar epithelial cell inclusions, formerly suspected of being protozoa, are frequently found.

**Diagnosis.**—Herpes zoster has such characteristic features that it is one of the easiest of all cutaneous diseases to recognize. A unilateral eruption, consisting of groups of large vesicles upon an erythematous base, following the course of cutaneous nerves,



Fig. 42.—Herpes zoster—intercostal.

and accompanied or preceded by neuritic pains, is characteristic of herpes zoster. The vesicles of zoster differ from those of eczema in being larger and in showing little tendency to spontaneous rupture.

**Prognosis.**—Favorable. Most cases get well spontaneously in one to three weeks. It should not be forgotten that some cases are followed by persistent neuralgia, especially in the

aged, and others may lead to scarring, or, in the case of the ophthalmic form, to serious impairment or loss of vision.

**Treatment.**—*Local treatment* is concerned merely in protecting the parts from injury and infection and, to a certain extent, in the relief of pain. Ordinary dusting powders, such as zinc oxid, starch, talcum, etc., may be employed, or, if there is much pain, morphin and camphor may be added. The part may then be protected with absorbent cotton and a bandage.

An excellent method is to paint the affected areas, when not too extensive and when not occupying flexures, with collodion containing ichthyol:

R. Ichthyol. .... 3j;  
Collodii. .... 5j.—M.

The galvanic current mildly applied along the nerve often gives marked relief from pain.

*Internal Treatment.*—The pain is often so severe as to require the use of an anodyne. The following prescription will be found of service:

R. Codeinæ sulphat. .... gr.  $\frac{1}{4}$ ;  
Phenacetin. .... gr. ij;  
Quiniæ sulphat. .... gr. j.—M.  
Sig.—One capsule every four hours or oftener.

The treatment of herpes zoster with zinc phosphid in one-third of a grain doses every three hours is warmly advocated by some. In the neuralgia persisting after the disappearance of the eruption antipyrin, quinin, iron, strychnin, arsenic, and the galvanic current are of value. In several cases recently treated I have obtained rapid amelioration of the pain from the use of the x-rays.

### LICHEN PLANUS

*Synonym.*—Lichen ruber planus. *Derivation.*—Λειχήν, a lichen or moss.

**Definition.**—Lichen planus is an inflammatory disease of the skin, characterized by small, flat, angular, red or bluish-red, shining papules, tending at times to coalescence forming patches, and accompanied by a variable amount of itching.

Formerly lichen planus and lichen acuminatus were considered as different varieties of the same disease. There is general agreement now that the latter is identical with the pityriasis rubra pilaris of Devergie.

**Symptoms.**—The disease begins as pin-point- to pin-head-sized

reddish papules, which soon acquire an angular, polygonal, or faceted contour. The papules are, furthermore, flat and shining, particularly when viewed in proper light. A small depression or umbilication is seen in many lesions, as a rule, due to the presence, in the center of the papule, of a glandular orifice. In color, the eruption varies from a pinkish-red during the evolutionary period, to a dull bluish-red, violaceous, or purple tint. The surface of the papule has a grayish translucence, and often exhibits, upon close scrutiny, grayish trails or striæ. As a rule, no distinct scaling is present. The lesions may be discrete and disseminated, but are more commonly closely aggregated in groups or patches. In rare cases there is a tendency to annular arrangement of the papules, a variety which has been designated *lichen planus annularis*. At times



Fig. 43.—Lichen planus.

the papules are arranged in linear patches; when a beaded linear arrangement predominates, the term *lichen ruber moniliformis* is employed. New papules may follow scratch-marks and other trauma, and thus some linear arrangement may be accounted for.

The favorite seat of the eruption is the flexor surfaces of the wrists and arms; the abdomen, legs, and back of the hands are also often attacked. In extensive cases large areas of the body surface may be affected. It is not rare to note whitish patches and streaks upon the buccal mucous membrane and at times upon the tongue.

Upon the legs, the form most commonly seen is that termed *lichen planus hypertrophicus*. The papules are large—often pea-sized—and are more elevated and less angular. They tend to coalesce and form raised patches of variable size. The patches are infiltrated, scaly, and often verrucous. The

lose their individual outlines, and only far out upon the periphery can lesions characteristic of the disease be seen. The color of the patches is violaceous, bluish, or lilac tinted, often with a surrounding pigmented zone.

Itching is, in the majority of cases, a prominent and annoying symptom. In some cases, however, it may be slight or absent. On the other hand, it may be so intense as to be scarcely bearable.

Lichen planus is, as a rule, slow in both evolution and involution. The eruption comes out gradually. Its duration is variable, lasting weeks, months, or, more rarely, years. Relapses occur at times, but distinct second attacks are uncommon.



Fig. 44.—Lichen planus in hypertrophic patches. Primary discrete papules not visible in this case.

When the eruption disappears, a brownish pigmentation is usually left, which slowly fades.

The general health, as a rule, is not seriously disturbed. I have observed, however, coincident with attacks, a considerable falling off in the body weight.

**Etiology.**—The disease is nearly always of neurotic origin. The most common cause is nervous exhaustion from anxiety, grief, overwork, and all forms of mental strain. Digestive disturbances seem to be causative in some cases. Lichen planus is essentially a disease of adult life, and is rare in children.

**Pathology.**—The pathologic process consists of a circumscribed lymphoid cell-infiltration in the papillary layer of the corium. The papule is usually situated about a sweat-duct,

although a hair-follicle may occupy the center. There is a hypertrophy of the cells of the rete mucosum (acanthosis), followed by epithelial atrophy and colloid degeneration. Hyperkeratosis or overgrowth of the horny layer is commonly associated.

**Diagnosis.**—The characteristic features of the papules of lichen planus are their angularity, flatness, shining surface, violaceous color, and umbilication.

These peculiarities, with the distribution of the eruption on the wrists, abdomen, and legs, and the absence of antecedent moisture, will distinguish this disease from *eczema*. The infiltrated plaques on the legs may be confounded with *eczema* or *psoriasis*, but their purple or lilac tint and the frequent presence of outlying discrete papules will help clarify the diagnosis.

**Prognosis.**—The prognosis is favorable, but the eruption often lasts for weeks, months, or even longer.

**Treatment.**—The treatment is both general and local. Attention to hygiene and diet is often of importance. Arsenic has been for many years viewed with special favor in the treatment of lichen planus. It often fails, however; it is chiefly indicated in the subacute and chronic cases. Mercury is frequently of value, and is in many cases an excellent substitute for arsenic. The two preparations may be administered in combination in the form of Donovan's solution. Crocker is fond of using salicin in fifteen- to twenty-grain doses in subacute and chronic cases.

Chlorate of potash, dilute nitric acid, and quinin have also been advised in obstinate cases. Change of climate sometimes effects a cure.

**Local Treatment.**—Applications containing tar, carbolic acid, menthol, salicylic acid, mercury, etc., act most favorably. A lotion of phenol and the tincture of mineral tar is useful in relieving itching. The following formula, suggested by Unna, may be heartily indorsed:

|    |                            |            |
|----|----------------------------|------------|
| R. | Hydrargyri bichloridi..... | gr. j-ij;  |
|    | Acidi phenici .....        | gr. xv;    |
|    | Lanolini }                 |            |
|    | Vasellini }                | āā ʒiv.—M. |

In indolent plaques on the legs strong remedies are necessary. I have employed a chrysarobin ointment, twenty to forty grains to the ounce, with good results.

The x-rays are valuable in many cases.

**LICHEN RUBER ACUMINATUS (PITYRIASIS RUBRA PILARIS)**

*Synonyms.*—Lichen ruber (Hebra); Pityriasis rubra pilaris (Devergie).

**Definition.**—Lichen ruber acuminatus, or pityriasis rubra pilaris, is a mildly inflammatory disease, characterized by small, conical, dry papules with horny centers, occurring at the mouths of hair-follicles, running a chronic course and tending to gradual extension. The three cardinal features of the eruption are: (1) Horny follicular papules; (2) pityriasic desquamation; (3) exaggeration of natural folds of skin. The disease usually develops gradually, although less commonly the eruption may appear with considerable rapidity.

The palms, soles, scalp, or face may be the first areas involved. Upon the palms and soles there may be roughness and scaling and generalized redness. The scalp, when first attacked, presents the appearances of a dry seborrhea. On the face, fine adherent scales are observed in the frontal, orbicular, and nasolabial regions. The characteristic lesions of the disease are small, conical or acuminate, hard, dry papules which are located at the sites of hair-follicles. These are of a pale yellow, pale red, or duller hue. The papules are pierced by hairs, many of which are of the fine lanugo variety. A horny sheath surrounds the hair and penetrates the follicular opening. Many papules have a distinct horny plug in the center which, when removed, leaves a crateriform depression.

In well-pronounced cases the eruption involves large areas of cutaneous surface. The lesions may coalesce and form patches which exhibit a goose-flesh or nutmeg-grater appearance, or they may be covered with fine adherent grayish scales or larger, flaky lamellæ. The face may be whitish, with fatty scales, or red, branny, and infiltrated, the latter condition often producing an ectropion. Around the joints the folds of the skin are considerably exaggerated, and a resemblance to ichthyosis is sometimes presented.

A highly significant feature from a diagnostic point of view is the presence, upon the backs of the first digital phalanges, of a number of horny black points or plugs occupying the hair-follicles. A similar condition may sometimes be seen at the nape of the neck. The nails are often affected, being grayish or yellowish and softened or striated.

Itching may be present, but it is usually not a pronounced symptom. The course of the disease is chronic, with a tendency to exacerbations. Some cases terminate in pityriasis rubra.

The general health is ordinarily not impaired. Long-standing and severe or acute wide-spread attacks may terminate in death. Hebra's cases were of unusual severity and fatality, but such cases are rare now.



Fig. 45.—Pityriasis rubra pilaris in a mulatto.

**Etiology.**—The cause of the disease is involved in complete obscurity. It attacks more commonly children and young adults.

**Pathology.**—The horny papule is produced by cornification of the epithelial strata about the orifices of the hair-follicles;



the essential lesion is, therefore, a follicular hyperkeratosis. In long-standing cases chronic inflammatory changes in the corium are observed.

**Diagnosis.**—The disease is to be distinguished from psoriasis, lichen planus, pityriasis rubra (Hebra), and in mild cases from



Fig. 46.—Pityriasis rubra pilaris in a mulatto.

ichthyosis. The presence of horny black follicular plugs upon the backs of the fingers is highly characteristic.

**Prognosis.**—The disease runs an extremely slow course, sometimes ending in recovery, although commonly persisting

for an indefinite period. Cases apparently cured may suffer recurrence. A fatal outcome is nowadays rare.

**Treatment.**—The treatment in general is that employed in psoriasis. Measures directed toward the general health should not be neglected. Arsenic, mercury, pilocarpin, thyroid extract, and tonics are advised. Locally, alkaline baths, salicylic acid, tar, pyrogallie acid, chrysarobin, and the like are to be used, depending upon the stage of the disease.

### RESISTANT SCALY ERYTHRODERMIAS

The above title, similar to that suggested by Fox and McLeod, applies to a number of dermatoses described under various designations, but closely allied in their clinical and histologic appearances. In this group may be included—(1) Parakeratosis variegata; (2) érythrodermie pityriasique en plaques disséminées (Brocq); (3) pityriasis lichenoides chronica (Juliusberg); (4) dermatitis psoriasiformis nodularis (Jadassohn); (5) lichenoid psoriasiform exanthem (Neisser). Brocq has given the designation parapsoriasis to this group, and Crocker includes them under the term lichen variegatus.

**Parakeratosis variegata** begins usually as pin-point- to pin-head-sized reddish macules or papules, somewhat suggesting lichen planus. They are covered with a fine adherent scale. The lesions tend to coalesce, as a result of which a peculiar network arrangement is produced. The color, which varies from a pinkish to a bluish-red, and the retiform appearance together give the integument the marbled or variegated effect so characteristic of the disease. Almost any part of the body may be affected. Subjective sensations are absent. The disease is refractory to treatment.

**Érythrodermia pityriasique en plaques disséminées** occurs on the trunk, extremities, and less commonly the face, as non-elevated, pale-red patches of a round or oval shape. They are covered by a fine, furfuraceous scaling. Older patches may present a brownish or mahogany tint. The disease runs over a period of years and is obstinate to all treatment. There are no subjective disturbances. Seborrheic eczema and pityriasis rosea are simulated in the beginning. In a case of this kind under my observation, the disease underwent involution and was cured.

**PROGRESSIVE PIGMENTARY DERMATOSIS**

In 1901 the author published a description of an affection beginning as pin-head, reddish puncta or dots forming irregular patches which slowly extend by the formation of new lesions upon the periphery. The patches are irregular in shape, smooth, non-elevated, of a reddish-brown or burnt-sienna



Fig. 47.—Progressive pigmentary disease, eruption present on both legs and wrists.



Fig. 48.—Progressive pigmentary disease. Same patient as Fig. 47 (old traumatic scar in center).

color. The border of the patches was made up of puncta closely resembling grains of Cayenne pepper, although, perhaps, of a slightly darker tint; they had somewhat of a telangiectatic appearance. The patches in the course of time disappeared,

leaving behind brownish-yellow or reddish-brown pigmentations which slowly faded. The process was extremely slow, and the patches may remain practically unchanged for several years.

The disease involved both wrists and both legs from the ankle to the knee. The affection was progressive, a constant spread taking place for a period of five years. Spontaneous involution occurred in the oldest areas, some of which were ultimately restored to their normal condition. There was entire absence of subjective symptoms. The patient was a boy fifteen years old.

The pathologic process had its chief seat in the subpapillary layer of the corium, with greatest intensity in the immediate neighborhood of the sweat-ducts. There was pronounced cell-infiltration about the blood-vessels. In the region of the sweat-ducts the cells were arranged much in the manner of hanging branches of a palm-tree. No pigment-cells or free pigment-granules were found. The specimen examined, however, was a recent lesion from the border of the patch.

### PRURIGO

*Derivation.*—L., *prurire*, to itch.

**Definition.**—Prurigo is an inflammatory disease of the skin, characterized by the occurrence of pin-head- to lentil-seed-sized, flesh-tinted or pale-red papules, occurring chiefly upon the extensor surfaces of the extremities, beginning in infancy or early childhood, lasting for years or through a lifetime, and accompanied by intense itching. The term prurigo is here confined to the disease described under that title by Hebra; some of the older writers have loosely applied the designation "prurigo" to a variety of itching dermatoses.

**Symptomatology.**—According to the severity of the disease, two types are distinguished—prurigo ferox (severe prurigo) and prurigo mitis (mild prurigo).

The disease begins usually in the first year of life, not infrequently taking the form of an ordinary urticaria. Later, there appear upon the extensor surfaces of the legs and arms, the trunk, and sometimes the forehead, pin-head-sized or larger discrete, firm papules. These may be pale red or may possess the natural color of the skin. The itching is intense, as a result of which the affected areas are covered with scratch excoriations and blood-crusts. After a time the skin becomes harsh, dry, greatly thickened, and sometimes pigmented.

The natural furrows of the skin are, after a time, greatly exaggerated.

The neighboring lymphatic glands, particularly those in the inguinal regions, are often so markedly enlarged as to be apparent to the eye.

The disease is extremely rebellious, and may persist for years or even throughout the entire lifetime of the individual. It is apt to undergo spontaneous improvement in the summer season.

Prurigo is chiefly encountered in Austria; the true prurigo of Hebra is rarely seen in this country.

**Etiology and Pathology.**—The disease is engendered by the environment of "misery"—poor food, bad hygiene, etc. It is largely limited to the poorer classes. Tuberculosis is regarded by some as a causative factor.

The microscopic changes are those of a chronic inflammation, and practically identical with those seen in long-standing papular eczema.

**Diagnosis.**—The disease is chiefly to be distinguished from a chronic papular eczema. The extreme rarity of prurigo in this country should be borne in mind. Attention to the localization and character of the papules, their uniform appearance, the marked adenopathy, the chronic and refractory course, and the origin of the disease in early childhood will usually render the diagnosis easy.

**Prognosis.**—Severe cases often persist for a life-time. Milder cases may, under judicious treatment, be cured. Some cases get spontaneously well around the age of puberty.

**Treatment.**—The therapeutic indications are to relieve the intense itching, to effect a disappearance of the eruption, and to improve the general health. Nutritious food and proper hygiene are essentials. Tonics, such as iron, cod-liver oil, and the hypophosphites, are often indicated. Arsenic is of little or no value. Crocker recommends for the relief of the itching the tincture of cannabis indica, beginning with five-minim doses—in a child of eight, for instance—and increasing to the physiologic limit.

Locally, ointments of betanaphthol, sulphur (one dram to the ounce), and tar are of value. The Wilkinson salve, containing tar, sulphur, and green soap, is distinctly useful. Kaposi strongly advocates the following:

R. Betanaphthol ..... gr. x-xxx;  
 Petrolati..... ʒj.—M.  
 Sig.—Rub in each night.

Baths are extremely useful, particularly—(1) The alkaline bath (sodium bicarbonate, 4 ounces to 30 gallons of water) and (2) the sulphur bath (precipitated sulphur or potassium sulphid, 4 ounces to 30 gallons of water).

### LICHEN SCROFULOSUS SEU SCROFULOSORUM

**Definition.**—Lichen scrofulosus is a chronic inflammatory disease, characterized by millet-seed-sized, flat, reddish or yellowish, more or less grouped, scaly papules, occurring in scrofulous subjects.

**Symptoms.**—The disease occurs in young individuals exhibiting other evidences of the scrofulous diathesis. The papules, which are scattered over the chest and abdomen, have their origin about the hair-follicles. They are pin-head-sized, pale-red or yellowish, somewhat scaly, and tend to become aggregated in groups. Itching is absent.

The course of the disease is chronic, lasting for years. The disease is rare.

The eruption is supposed to be due to the toxins of the tubercle bacillus. The organisms themselves are ordinarily not found in the lesions.

The disease must be differentiated from the miliary papular syphilid, papular eczema, and lichen planus. The distinction can, as a rule, be made without difficulty.

**Treatment.**—Good food and proper hygiene are indicated. Cod-liver oil, used both internally and externally, will usually effect a cure.

### ACNE

*Derivation.*—'Ακνὴ, a point. *Synonym.*—Acne vulgaris.

**Definition.**—Acne is an inflammatory disease occurring in and around the sebaceous glands, characterized by papules, tubercles, or pustules, affecting chiefly the face, and running a more or less chronic course.

Acne is an extremely common disease, comprising over 7 per cent. of all dermatoses. It is much more common in private practice than among hospital cases. It is essentially a disease of youth, and is usually seen in the second decade <sup>66</sup>

although it is not uncommon in the first half of the third decade.

**Symptoms.**—The forehead, cheeks, and chin are the regions usually affected, although the chest, shoulders, and back are not infrequently involved. The lesions are papular, pustular, or nodular, or a combination of these may be present. They are irregularly scattered over the surface, without any definite tendency to grouping. The primary lesions are pin-head- to lentil-sized, bright or dark-red papules, appearing about the orifices of the sebaceous ducts. After a period of a few days



Fig. 49.—Severe deep-seated acne.

or a week the lesions either become pustular and discharge, or undergo absorption, leaving behind reddish stains or, in some cases, scars. A new crop succeeds the old, the affection thus continuing for months or years. The eruption is seen in various stages in the same patient, papules, pustules, stains, etc., being present at the same time.

Blackheads, or comedones, are an essential part of the disease. The bluish-black color is due somewhat to dust accretions from without, but more to chemical changes in the sebum. Not infrequently small white pin-head-sized prominences are present; these represent collections of sebaceous

material which may be expressed in thread-like filaments. The blackheads usually eventuate in acne papules or pustules unless they are mechanically removed. The number of comedones varies in different cases, being sometimes abundant and at other times present only in small numbers. When they are numerous, there is usually a concomitant oily seborrhea which renders the skin greasy and facilitates the deposition of aërial dust.



Fig. 50.—Papulopustular acne.

For purposes of teaching various designations have been given to acne eruptions presenting certain characteristics. When the predominant eruption is represented by small conical elevations with central sebaceous openings containing dark points, the term *acne punctata* is applied. *Acne papulosa* is characterized by pin-head-sized or larger reddish papules. When the latter suppurate, they *pustulosa*. The variety with numerous small



in very young girls and boys, and is particularly refractory to treatment.

In *acne indurata* the lesions are nodular, deep seated, and often painful. In their inception they can be better felt than seen. Soon the overlying skin assumes a deep-red or purplish coloration; the sebaceous duct being obstructed or obliterated, there is no follicular opening. This condition is popularly called a "blind boil." Suppuration and rupture gradually take place, although the lesions may remain as an indurated nodule for some time. When these deep lesions are punctured with a fine bistoury, frank pus or inspissated sebum is always evacuated; this effects a disappearance of the lesions. When the inflammatory process affects several adjacent glands, the suppurating lesions may coalesce, forming cherry- to hazelnut-sized sebaceous abscesses. These deep acne nodules lead to considerable scarring, particularly if left to spontaneous evacuation.

*Acne artificialis* is a papular or pustular eruption produced by the internal administration of the iodids and bromids or external exposure to tar (tar acne) or paraffin.

*Acne cachecticorum* is an acne occurring usually upon the trunk and extremities of tuberculous, scorbutic, or anemic subjects. The eruption consists of large suppurating lesions, often with a purplish color, due to the presence of blood. There is a distinct tendency to scarring. This form of acne is due to the depraved condition of the patient's health and may continue into adult life.

The subjective symptoms in acne are extremely mild. Itching and burning are usually absent, but in some cases exist in a mild degree. The large indurated lesions are often painful or rather tender to the touch.

The course of acne is chronic, the disease, untreated, tending to last for months or years. In girls, periodic aggravation occurs with great constancy before, during, or after each menstruation. Spontaneous improvement commonly takes place between the ages of twenty-five and thirty.

**Etiology.**—Puberty is the most potent predisposing cause, the vast majority of cases of acne occurring between the ages of fifteen and twenty-five; after thirty acne is extremely uncommon.

There are several theories regarding the causation of acne. One supposes that acne is largely a local skin disease and that

it is but little influenced by internal conditions and internal treatment. It is held that there is a follicular hyperkeratosis which obstructs the hair-follicles and sebaceous glands and leads to sebaceous retention, inflammation, and suppuration. The influence of special microorganisms is recognized by many of the advocates of this view.

According to another theory, internal disorders, particularly those related to the alimentary tract, play an important rôle in the production of acne.

Acne is a local disease, but there can be no question that it is influenced by systemic conditions. I have seen a severe and persistent acne develop after an attack of typhoid fever in a young woman of twenty-four who had previously never had acne. The question for solution is whether, in ordinary cases, the local or general causes are dominant.

The great pilosebaceous development occurring at puberty is easily subject to pathologic perversion. There may be an enervation of glandular activity as a result of dyspepsia, constipation, uterine or menstrual disorders, anemia, tuberculosis, general debility, etc. As a result of glandular indolence, sebaceous retention and obstruction, with their train of consequences, may develop. Or it is possible that the general causes referred to merely render the skin and its contained glands favorable seats for the maintenance and growth of certain microorganisms.

Unna, Sabouraud, and Gilchrist have each described a bacillus which is regarded by the discoverer as the cause of acne. Sabouraud's organism, the microbacillus of seborrhea, is found in myriads in comedones and in sebaceous filaments. Staphylococci are generally believed to cause the suppuration of lesions.

**Pathology.**—An acne lesion pathologically is represented by a folliculitis or perifolliculitis. There is an engorgement of the surrounding blood-vessels and an intense cell-infiltration. The process ends in resorption or suppuration, with or without the destruction of the follicle.

**Diagnosis.**—The diagnosis of acne is, as a rule, unattended with difficulty. Even the layman recognizes a case of "pimples." The presence of discrete papules, pustules, black-heads, and enlarged pores upon the face is the history of origin at puberty and relates the picture.

The papulopustular syphilid may be readily distinguished by its generalization, acuteness, and the presence of associated symptoms. Acne commonly develops in syphilitics who are taking the iodids.

**Prognosis.**—Nearly all cases of acne may be cured by one means or another.

**Treatment.**—The treatment is both constitutional and local. There are no internal remedies which exert a direct action upon acne. Some patients are in such excellent health that no internal treatment is at all indicated. In general, the *constitutional treatment* should be directed toward the correction of systemic derangements.

Dyspepsia and constipation frequently call for treatment. For the former, the bitter tonics, mineral acids, and alkalis may be used, according to the exigencies of the case. Constipation may be combated by diet, abdominal massage and exercises, and the various laxatives. A pill of aloin, strychnin, and belladonna, blue-mass or calomel, cascara sagrada, the salines, etc., are all useful.

The following is an admirable combination for coëxisting anemia and constipation (Startin):

R. Ferri sulphat. .... gr. xvj;  
 Magnes. sulphat. .... ʒj;  
 Acidi sulphur. dil. .... fʒj;  
 Aquæ menth. pip. .... q. s. ad fʒiv.—M.

SIG.—Tablespoonful in a goblet of water a half-hour before breakfast.

A more palatable combination, useful in the same class of patients, is the following:

R. Strychniæ phosphat. .... gr. j;  
 Ferri pyrophosphat. .... gr. xlviij-xxij;  
 Sodii phosphat. .... ʒj;  
 Syrupi aurantii } ..... āā q. s. ad fʒvj.—M.  
 Aquæ }

SIG.—Two fluidrams in water before meals.

The laxative mineral waters, such as Hunyadi János, Carabana, Pluto, and Saratoga, may also be employed.

In cases attended with much pustulation the sulphid of calcium, in one-tenth to one-half grain doses four times daily, is said to be servicable, but in my experience has never been productive of results. Ferruginous preparations are of value in cases complicated by chloroanemia. Cod-liver oil and the

hypophosphites are indicated in strumous and rachitic patients. Small doses of arsenic, strychnin, and mercury bichlorid are advised in individuals with lowered nerve tone.

Hygienic measures, such as cold baths, outdoor exercise, and regular life, are more important than the use of drugs. In many cases dietary restriction is necessary. Highly seasoned foods, tea, coffee, pastries, salt meats, and alcoholic beverages are to be avoided and starchy and sugary food limited.

*Local Treatment.*—The object of local treatment is to hasten the disappearance of existing lesions and to stimulate the sebaceous glands to healthy action.

The nature of the remedies to be employed depends upon the amount of inflammatory reaction present. In the vast majority of cases stimulating applications are indicated. Occasionally, however, the face is hyperemic and tender and requires the use of sedative lotions and salves.

Before the local remedies are applied, the face should be thoroughly washed with soap and hot water, with a view to opening up the follicles. For this purpose ordinary soap may be employed, or in sluggish cases soft soap or the tincture of green soap. Sulphur, salicylic acid, and resorcin soaps are valuable. This is advantageously followed by mopping the face for five minutes with very hot water.

Salves and pastes are most conveniently applied at night. Lotions, used alone or in conjunction with ointments, may be sopped on frequently during the day.

*Sulphur* is the most generally useful and efficient remedy. It may be used in the form of a powder, ointment, paste, or lotion. When the lesions are deep seated and the face dry, ointments are to be preferred; when superficial and the face is oily, lotions are indicated.

Incorporated in a paste, sulphur may be used as in the following formula:

|    |                         |                |
|----|-------------------------|----------------|
| R. | Sulph. præcip.....      | 3j;            |
|    | Lassar's paste: { Amyli | } .....āā 3ij; |
|    | { Zinci oxidi           |                |
|    | { Petrolati .....       | 3iv.—M.        |

SIG.—Rub in at night.

One of the most eligible and efficient lotions is known as the "compound zinc sulphid lotion." It may be used four or five times a day, and has the advantage that it may be employed upon the face without disfigurement. Its formula is as follows:

R. Zinci sulphat. }  
 Potass. sulphid. } ..... āā gr. xxx-3j;  
 Aq. rosæ ..... f3iij.

(The ingredients are to be dissolved separately, heated, and then mixed. A double decomposition takes place, with the precipitation of a whitish powder. The potassium sulphid should always be fresh.)

When numerous blackheads and superficial papules and pustules are present, the following lotion will be found useful in effecting marked improvement through desquamation of the skin:

R. Acidi salicylici ..... 3j;  
 Resorcini ..... 3ij;  
 Glycerini ..... f3iv;  
 Spts. vini recti. }  
 Aquæ } ..... āā f3ij.—M.  
 Sig.—Apply twice a day.

As soon as peeling begins, the use of the lotion should be interrupted and a soothing ointment applied. The lotion may be later resumed.

Another useful formula is that devised by Kummerfeld:

R. Sulph. præcip. .... 3j-ij;  
 Pulv. camphoræ ..... gr. xv;  
 Pulv. tragacanth. .... gr. xxv;  
 Aq. calcis }  
 Aq. rosæ } ..... āā f3ij.—M.

*Resorcin* is likewise a remedy of value in acne. It may be employed in varying strengths from twenty grains to a dram to the ounce. Patients vary considerably in their reaction to this drug, and the weaker strengths should be first employed. It is advantageous in many cases to produce some scaling. The ointment should then be intermitted, a mild unguent employed, and the resorcin salve subsequently resumed. The following combination of resorcin and sulphur has given me good results:

R. Resorcin. .... gr. xx-xl;  
 Sulph. præcip. .... gr. xxx-3j;  
 Lanolini ..... 3iv;  
 Ung. aq. rosæ ..... 3iv;  
 Olei lavandulæ ..... q. s.—M.

The mercurials are sometimes serviceable in the treatment of acne. Care must be taken in changing from sulphur to the

mercurial treatment, or vice versa, that there be an intermission of a few days and that the face be thoroughly cleansed to avoid the disagreeable though temporary crop of blackheads resulting from the formation of the sulphid of mercury. The following is a much-used formula:

R. Hydrarg. chloridi corrosiv. .... gr. ss-ij;  
Emuls. amygdal. amar. .... f $\frac{3}{4}$ iv;  
Tinct. benzoin. comp. .... f $\frac{3}{4}$ j.—M.

Or the ammoniated mercury in ointment form may be used:

R. Hydrarg. ammoniat. .... gr. xxx- $\frac{3}{4}$ j;  
Ung. zinci oxidi ....  $\frac{3}{4}$ j.—M.

In addition to the above remedies, betanaphthol (10 to 30 grains to the ounce) and ichthyol (1 to 2 drams to the ounce) may be found useful.

*Mechanical Treatment.*—The evacuation of acne pustules and the expression of blackheads are essential and important



Fig. 51.—The author's comedo extractor; the smaller loop is used for blackheads and the larger one for pustules.

parts of the treatment of the disease, no matter what other therapeutic measures are employed.

Some form of comedo extractor should be used to press out the blackheads; in the absence of an instrument of this character the rounded end of a strong hairpin is a good substitute. The pustules should be opened with a pointed instrument, and then pressure made on the base to evacuate the follicle. Every indurated lesion of any duration contains a collection of sebum or pus. I have found a von Graefe cataract knife to be the best instrument to puncture these with. It makes a very small incision, and its use is almost painless. Deep lesions which are left to spontaneous evacuation are more apt to leave scars.

Some physicians scrape the face with a ringed curet to evacuate pustules and blackheads, and prefer this means to any other. It is rapid, but temporarily disfiguring. Massage and pinching of the face are useful in expressing sebum and stimulating the glands to healthier activity.

The *x-rays* have proved a useful addition to resources in the treatment of acne, but

valuable as they were, in the enthusiasm of early successes, thought to be. Many cases of acne, even of long standing and refractory to other methods of treatment, may be cured by the *x*-rays. The disadvantages are that mild *x*-ray treatment does not insure against relapses, and vigorous treatment, although it may cure the disease, may leave scarring, and in some cases telangiectases and wrinkling. The *x*-rays, therefore, should be reserved for severe cases that are refractory to other methods of treatment. When used in mild cases, the rays should be employed with the greatest care, only by those skilled in their use, and merely as an auxiliary to other methods. (See chapter on *x*-Rays.)

*Actinic Light Treatment.*—The actinic rays of light exercise a favorable influence on acne lesions. The blue, violet, and ultra-violet rays are not only microbicidal, but they cause a mild erythematous dermatitis which effects a retrogression of superficial acne lesions. I use a mercury vapor lamp of special construction or a powerful arc lamp with iron carbons as an alternating treatment with mild roentgenization in many cases of acne. It is advisable to produce, with each actinic treatment, a mild erythema.

*Vaccine Therapy.*—A discussion of vaccine therapy in acne will be found in the special chapter on this subject on p. 414.

### ACNE ROSACEA

*Synonym.*—Rosacea.

**Definition.**—Acne rosacea consists of two processes: a rosacea and an acne. The former is a chronic, congestive disorder of the face, particularly of the nose, chin, and forehead, characterized successively by flushing, permanent enlargement of the blood-vessels, and, in some advanced cases, tissue hypertrophy. The acne lesions are secondary in development.

Acne rosacea is comparatively common, and occurs in persons beyond the age of twenty-five or thirty years.

**Symptoms.**—There are essentially three stages to the disease, although only rarely does the disorder develop to the third one. The first manifestation is a tendency to flushing of the face, which becomes especially evident after eating or drinking stimulating articles or after exposure to cold winds or upon entering a warm room. The redness may be bright or dull,



Fig. 52.—Acne rosacea.



Fig. 53.—Acne rosacea.



and has at times a bluish cast. The nose, forehead, cheeks, and chin are commonly involved. Indeed, there is a distinct predilection for the middle vertical third of the face. The redness is only transitory at first, and fades after an hour or fraction thereof. The color disappears under pressure, and a cool feel is imparted to the finger.

The tendency may last for weeks or months, and then disappear spontaneously or under treatment. In many cases the condition passes on to the second stage. The frequent repetition of flushing gradually tends to an enlargement of the caliber of the capillaries and venules, which now become visibly dilated. They are seen as small tortuous or arborescent vessels on the nose and cheeks. The redness becomes more persistent, although its intensity varies from time to time.

The causes above referred to, as well as coughing, laughing, and mental excitation, lead to paroxysmal exacerbations. Acne papules and pustules now make their appearance, usually in crops, as in ordinary acne. They are particularly prone to be located upon the nose, chin, forehead, and in the malar regions. The extreme sides of the face exhibit few if any lesions. The papules are commonly large and disfiguring, being covered or surrounded by a deep-red or bluish telangiectatic integument. When the nose is markedly affected, the appearance commonly described as "brandy nose" is presented. Very often there is a coëxisting oily seborrhea and the nose is greasy and shows gaping sebaceous orifices.

In exceptional cases the disease progresses to a third stage, which is characterized by further capillary engorgement and tissue hypertrophy. The nose may be bulbous or lobulated or may actually be the seat of pendulous, sessile, or pedunculated tumors.

In color it is deep red and often purplish. As may be imagined, a most conspicuous deformity results. To this condition the term "*acne hypertrophica*" or "*rhinophyma*" is applied. In some cases hypertrophy of the skin of the forehead or chin takes place.

**Etiology.**—The usual type of the disease is rarely seen before the age of thirty. I have observed a rosacea limited to the nose in young women about the age of twenty. The milder forms of acne rosacea are somewhat more common in women, but the hypertrophic variety is seldom seen in this sex. Gastro-intestinal disorders and improper diet are responsible for

most cases. The inordinate use of coffee and tea in women is an important factor. Alcoholic beverages have long been recognized as a fertile cause. Congestion of the face from gastric stimulation is a common observation. Stimulants doubtless act by producing a catarrh of the stomach. Excessive beer-drinking is often more potent a factor than wine or whisky. Exposure to heat, the heat of the sun, stoves, furnaces, etc., or to cold driving winds, particularly in drinkers, may lead to the hypertrophic form. Vasomotor weakness, utero-ovarian disease, and the menopause are additional causative factors in women.

**Pathology.**—There is at first a dilatation of the blood-vessels, followed by permanent enlargement. Ultimately, possibly as a result of hypernutrition, hypertrophy of the connective-tissue elements and enlargement of the sebaceous glands take place.

**Diagnosis.**—Acne may be distinguished from acne rosacea by the age of the patient and by the absence of telangiectases and tissue hypertrophy. The tubercular syphiloderm, lupus vulgaris, and leprosy may in some cases simulate rosacea, but the presence of hyperemia with enlargement of vessels and of acne papules and pustules occurring upon the nose and cheeks and running a chronic course will render the diagnosis easy. Both syphilis and lupus tend to ulcerate.

**Prognosis.**—Cases of moderate severity may be much benefited or cured by judicious treatment. When connective-tissue hypertrophy has taken place, the prognosis is more guarded. The disease exhibits no such tendency to spontaneous cure as is seen in simple acne.

**Treatment.**—Internal and external remedies are both of importance. The cause or causes of the disease must be assiduously investigated. When the stomach is at fault, the diet should be carefully regulated. Condiments, hot beverages, alcohol, tea, excess of starchy and sugary foods, and all sorts of stimulating articles are to be prohibited.

Due attention must be paid to the condition of the bowels. In the various forms of dyspepsia, nux vomica, the stomachic bitters, mineral acids, alkalis, etc., are to be prescribed. In dyspepsia with fermentation ichthyol has proved of value in one- to two-grain doses after meals. A few cases will require the use of iron, strychnin, cod-liver oil, and like tonics.

*Local Treatment.*—The sulphur preparations used in t<sup>h</sup>

treatment of simple acne are valuable also in rosacea. Excellent results often follow the use of the "compound zinc sulphid lotion" or Kummerfeld's solution (see Acne). Vleminckx's solution, prepared as follows, is often of value:

R. Calcis .....  $\frac{3}{4}$ ss;  
 Sulphur sublimat.....  $\frac{3}{4}$ j;  
 Aquæ ..... f $\frac{3}{4}$ x.—M.

To be boiled down to six ounces and filtered. Dilute one part to ten.

In some cases a sulphur ointment, one dram to the ounce, acts efficiently.

When the capillaries are large, they may be treated by scarification, by slitting them with a fine bistoury, or by inserting the electrolytic needle. I have found the use of Unna's micro-burner (needle-pointed Paquelin cautery) superior to any other method in destroying enlarged blood-vessels.

In hypertrophic cases ablation of the diseased tissues may be performed with a knife or scissors.

I have found the *x*-rays most valuable in the treatment of acne rosacea, more valuable, indeed, than in ordinary acne. With skilful treatment cures can be effected without scarring or atrophy. (For technic, see article on *x*-Rays.) The visibly enlarged blood-vessels do not, as a rule, disappear under this treatment. Hyde and Montgomery report good results in removing the telangiectasis by the use of actinotherapy, employing one of the types of lamps used by Finsen for lupus.

With these various physical treatments should, of course, be conjoined appropriate general and local treatment.

### ACNE VARIOLIFORMIS

*Synonyms.*—Acne frontalis; Acne necrotica.

**Definition.**—A chronic inflammatory disease, characterized by papulopustules with necrotic depressed centers, occurring for the most part about the forehead and scalp, and leaving pit-like scars. The affection is relatively rare. It is classed by many writers among the dermatoses related to tuberculosis.

**Symptoms.**—The disease is usually located upon the margin of the hair, scalp, eyebrows, etc., although other regions may become involved. The lesions consist of firm, reddish-brown papules which undergo vesiculation and pustulation and become covered with a firm, adherent, yellowish or brownish crust which

conceals a small central ulceration. On the fall of the crust a brownish-red depressed scar is seen. There is sometimes a disposition of the lesions to group. The disease is essentially chronic, and there is a marked tendency to recurrence. Subjective sensations are usually absent, although itching may be more or less marked. In severe cases the resulting scarring may suggest that of variola—therefore, the name.

**Etiology and Pathology.**—The disease rarely occurs before puberty. The nature of the disease is obscure. Some regard it as related to tuberculosis. Sabouraud invokes seborrhea as a predisposing cause, and looks upon his microbacillus as an important factor. The *Staphylococcus aureus* is commonly present and may play a rôle in the production of the lesions. The disease is alleged to begin in the upper part of the hair-follicle, whence it spreads downward and also to the sebaceous glands.

**Diagnosis.**—A strong resemblance to syphilis is sometimes presented. The chronicity of the disease, the limitation of the lesions to hairy regions, and the history will serve to distinguish acne varioliformis.

**Treatment.**—Sometimes there is a history of an antecedent syphilis. Such cases should be subjected to a thorough course of the iodids and mercury. Measures directed toward improvement of the general health should be employed whenever indicated. Locally, the best results are obtained with sulphur and mercurial ointments. In rebellious cases the electrocautery or thermocautery may be employed. The Röntgen rays might also be tried.

### DERMATITIS PAPILLARIS CAPILLITII

*Synonyms.*—Acne keloid; Keloid acne.

**Definition.**—Dermatitis papillaris capillitii is an inflammatory disease, commencing upon the hairy border of the nape of the neck, characterized by papules, pustules, papillomatous vegetations, and keloidal elevations.

**Symptoms.**—The disease begins as pin-head-sized papules or pustules upon the hairy border of the neck, often extending into the occipital region. These may remain discrete or become confluent, forming either papillomatous outgrowths or keloidal elevations. Pus may undermine the surrounding skin. Some areas exhibit permanent loss of hair, while on others tufts of hair spring up from the hypertrophied cicatricial tissue.

disease is chronic and progressive. In my experience it is considerably more common in negroes than in whites. It is almost exclusively observed in adult males.

**Treatment.**—The affection is markedly refractory to treatment. Epilation, followed by the application of a dram to the ounce of sulphur ointment, is sometimes efficacious.

In many cases it will be found necessary to resort to the use of the electrolytic needle, the electrocautery, Unna's micro-burner, or the x-rays to destroy the growths present. When the keloidal growths are large, excision, followed by the immediate use of the x-rays, should be carried out.

### SYCOSIS VULGARIS

*Derivation.*—Σύκωσις, fig-like, from σῆκον, a fig. *Synonyms.*—Sycosis nonparasitica (so called); Sycosis; Folliculitis barbæ; Coccogenic sycosis.

**Definition.**—Sycosis is a chronic inflammatory disease of the hair-follicles, usually of the bearded region, characterized by papules, pustules, and tubercles perforated by hairs.

**Symptoms.**—The disease commences by the formation of discrete pin-head- to pea-sized papules or pustules occupying the sites of the hair-follicles. The pustules are ordinarily conical, although they may be obtuse. The contents consist of a yellowish pus of varying degrees of consistence. The pus may become inspissated and dry as crusts, or the lesions may undergo rupture. The surrounding integument is commonly reddened, sometimes swollen and infiltrated, and the seat of a variable amount of itching, burning, and soreness. The pustules are discrete, but may be closely aggregated. A hair perforates the center of each lesion. In the beginning the hair is firmly attached, but as suppuration becomes free it is more easily extracted. At times tubercles are present.

The affection prefers the bearded region of the face, particularly the cheeks; it may or may not be symmetrical. When the mustache is involved, it is usually in the region directly below the nostrils. This form nearly always occurs in persons suffering from nasal catarrh, the lip becoming infected from contact with the nasal secretion.

The eruption appears in crops, like the lesions of acne. The patient is often encouraged to think that he is getting well, when a new outbreak dooms him to disappointment. The eruption may disappear under treatment for a shorter or longer period and then relapse. In untreated cases the exacerbations are frequent and the eruption is apt to be constantly present.

The neck, border of the hair, axillæ, and pubis are more rarely affected. In severe cases I have frequently noted involvement of the hairs of the eyelids, producing an appearance resembling an ordinary blepharitis.

**Etiology.**—The disease is obviously limited to males; it is usually seen between the ages of twenty-five and fifty. Nearly all writers regard the disease as microbic in origin, and attribute the lesions to infection with staphylococci. There must, however, be certain predisposing causes which are not yet understood, for sycosis is comparatively uncommon, whereas staphy-



Fig. 54.—Sycosis vulgaris.

lococci may be found upon the skin of practically all persons. Sycosis of the upper lip usually results from infection by nasal discharge; these cases are more common among the poor.

**Pathology.**—The pathologic process consists of a folliculitis and perifolliculitis, due to the invasion of pyogenic cocci. The inflammation is at first perifollicular, the follicle becoming only secondarily invaded by serum and pus.

**Diagnosis.**—Sycosis vulgaris may be confounded with tinea sycosis and pustular eczema. Below is appended the differential diagnosis:

## SYCOSIS VULGARIS.

1. A typical case shows discrete papules or pustules pierced by hairs.
2. Hairs firmly attached until free suppuration occurs. Roots often swollen with pus.
3. Course slow. Little change from week to week.
4. Mustache frequently affected.
5. Absence of fungus in hairs.

## TINEA SYCOSIS.

1. A typical case shows large lumpy or nodular tumefactions.
2. Hairs broken and easily extracted.
3. Course rapid. Marked changes from week to week.
4. Mustache rarely affected.
5. Ring-worm fungus in hairs.

## SYCOSIS VULGARIS.

1. Lesions strictly follicular, pierced by hairs.
2. Eruption limited to bearded region.
3. Absence of oozing.
4. Itching slight.

## ECZEMA PUSTULOSUM.

1. Lesions are apt to be inter-follicular as well.
2. Tends to spread upon non-hairy regions.
3. Oozing marked.
4. Itching more severe.

**Prognosis.**—Very few cases are incurable. The disease, however, is often refractory to treatment, and lasts months or years. Recurrences are common.

**Treatment.**—Internal remedies, such as iron, arsenic, cod-liver oil, etc., are at times indicated by the general condition of the patient.

External treatment is, however, far more important. An essential step in the local treatment is the systematic shaving or clipping of the hairs. The beard should be closely clipped with scissors, or, better still, shaved every two or three days. When suppuration is free, daily depilation should be practised.

When the inflammatory signs are marked, soothing lotions, such as *lotio nigra* or saturated solution of boric acid, or ointments of cold cream or zinc oxid, etc., may be employed. Most cases, however, require more stimulating applications.

Sulphur is here, as in most follicular inflammations, of great value. It is best employed in salve form, although lotions may also be used:

R. Sulph. præcip..... gr. xl-5j;  
 Petrolati..... 5j.—M.



Fig. 55.—Rebellious syphilis vulgaris of five months' duration, resisting all the usual methods of treatment.



Fig. 56.—Same patient cured after two injections of sterilized staphylococcic emulsion (vaccine). Represents condition two weeks after first photograph. No other treatment used. Patient has remained well now for several years.



A mercurial ointment often acts efficiently:

R. Hydrarg. ammoniat. .... gr. xxx;  
 Petrolati. .... 3j.—M.

The following formula is likewise useful:

R. Ichthyol. .... 3j;  
 Petrolati. .... 3j.—M.

A lotion of bichlorid of mercury, one-fourth to one grain to the ounce, sopped on frequently is often followed by good results.

*x-Ray Treatment.*—In severe and obstinate cases we possess a potent measure in the *x*-rays. Roentgenization will often effect a cure when all other remedies have failed. The irradiations should be employed for five to seven minutes at eight inches, two or three times a week. A medium soft tube should be used, with a secondary current of one to two milliamperes. It will often be necessary to produce epilation before the disappearance of the eruption is effected. Sometimes the disease relapses when the hair returns, necessitating further treatment. In extremely chronic and disfiguring cases the patients often prefer permanent loss of hair to persistence of the sycosis. (For further *x*-ray technic see special chapter, p. 404.)

### SYCOSIS LUPOIDES

*Synonyms.*—Ulerythema sycosiforme (Unna); Lupoid sycosis.

**Definition.**—An inflammatory disease of the skin, beginning as a sycosis, but leading to atrophy of the hair and sebaceous follicles and atrophic scarring. The disease is rare.

**Symptoms.**—In the beginning the disease is not to be distinguished from an ordinary sycosis. In the course of some months or years the affected hair and sebaceous follicles undergo atrophy, producing permanent baldness of the part and a whitish, atrophic scarring. The disease spreads by centrifugal extension, the advancing border being infiltrated, often serpiginous in outline, and studded here and there with pustules. Flat vesicles and blebs, attended by itching and burning, may in rare cases develop over the affected area. Such a case has been under my observation for some years; this patient has, in addition, "essential shrinking of the conjunctivæ."

The disease involves by predilection the beard, and is inclined to be symmetric.

**Pathology.**—Obscure. Some believe that there is engrafted upon an ordinary sycosis a tuberculous infection. In a well-marked case I found nests of dense round-cell infiltration throughout the corium, but no giant-cells or tubercle bacilli. Later there were complete atrophy of the hair-follicles and sebaceous glands and overgrowth of fibrous tissue.

**Diagnosis.**—It is most apt to be confounded with lupus vulgaris and lupus erythematosus. The chief characters of the disease are an antecedent sycosis, atrophy of follicles, atrophic scarring, centrifugal extension, and vesicle and bleb formation, the disease being limited to the bearded region.

**Prognosis.**—The disease is refractory to treatment and runs a course of years.

**Treatment.**—No treatment has been of much avail.

### PSORIASIS

*Derivation.*—Ψώρα, the itch. *Synonym.*—Lepra (used by early writers).

**Definition.**—Psoriasis is a chronic inflammatory disease of the skin, characterized by variously sized reddish, dry, rounded, sharply defined patches, covered with abundant imbricated, silvery scales. Psoriasis is a comparatively common disease, constituting from 3 to 4 per cent. of cases observed in dermatologic practice.

**Symptomatology.**—Psoriasis may begin at any age, but usually manifests itself first in youth and early adult life.

It invariably appears first as small, reddish, pin-point- to pin-head-sized flat or acuminated papules. These constitute the sole primary lesions of psoriasis. The papules are early seen to be surmounted by small scales; when these are not apparent, they may be made visible by slightly scratching the lesions. The papules increase in size, gradually or rapidly, by peripheral extension forming patches or plaques of varying dimensions. The small patches are usually round or oval; when increase in size occurs through coalescence of neighboring patches, all sorts of forms and configurations may be produced. The patches of psoriasis are sharply defined, of a dull reddish hue, and slightly elevated above the level of the surrounding integument. A moderate degree of infiltration is present. One of the striking features of the disease is the characteristic scaling. The papules are covered with profuse, shining, whitish, grayish, or mother-of-pearl scales, which are superimposed

upon one another in a manner somewhat like the shingles of a roof, or in other cases like layers of isinglass. When the scales are removed, a reddish base is exposed which exhibits, upon scratching with the finger-nail, punctate hemorrhages which issue from the apices of the abraded capillary loops of the papillæ.

Serous oozing is never present under ordinary circumstances; the lesions are always dry and scaly and unaccompanied by vesiculation or surface exudation.



Fig. 57.—Psoriasis guttata in a young girl.

The eruption attacks with predilection the scalp and the extensor surfaces of the extremities, particularly the elbows and knees. It is not uncommonly limited to these areas; in most cases, however, patches will be seen elsewhere. In extensive cases the trunk may be profusely attacked. The face is usually entirely free, but in other cases exhibits reddish, scaly patches along the border of the hair, in the eyebrows, and even

occasionally upon the cheeks. The palms and soles are rarely affected. It is doubtful whether psoriasis ever attacks the mucous membranes.

The nails are occasionally involved, as a result of which they become discolored, thickened, transversely grooved, or pitted. An appearance sometimes observed is a sharply defined yellowish discoloration on the lateral edges of the nail.

Psoriasis is not attended by any constitutional disturbance; the patients are ordinarily in good health. The subjective



Fig. 58.—Psoriasis of the nummular form.

symptoms are usually slight. Itching is commonly absent or moderate, but in rare cases it may be severe.

According to the size and configuration of the patches, various forms of psoriasis are distinguished: when the lesions consist of small scale-tipped papules, the term *psoriasis punctata* is employed; when these attain the size and shape of drops of water, the designation *psoriasis guttata* is applied. In *psoriasis nummularis* the patches reach the dimensions of coins. These vary in size from that of a silver dime to a dollar. Not infrequently the center of the patch clears up, leaving annular or ringed plaques; this variety is called *psoriasis circinata* or *annulata*. In *psoriasis gyrata* or *figurata* wavy and festooned outlines are produced through coalescence of annular or semi-

circular patches. Uniform involvement of large areas of the body surface constitutes the variety termed *psoriasis diffusa*. In long-standing and rebellious patches with extensive infiltration and fissuring the condition is appropriately designated *psoriasis inveterata*. *Psoriasis universalis* is applied to cases in which extensive sheets of eruption almost completely cover the cutaneous surface.

Psoriasis pursues, as a rule, an eminently chronic course. The eruption usually disappears either as a result of treatment



Fig. 59.—Psoriasis; typical distribution on extensor surfaces of arms.

or spontaneously, but in most instances there is a recurrence sooner or later. The eruption varies greatly in extent in different attacks. It is not uncommon for the eruption to remain limited for a year or more to a few patches on the elbows or knees. The lesions frequently disappear in the warm months of the year and reappear in cold weather; there are, however, exceptions to this rule. Many patients suffer new attacks in the early spring.

**Etiology.**—Our knowledge of the causation of psoriasis is

still involved in obscurity. Sex and social condition do not seem to exercise any particular influence. Psoriasis usually begins in youth or early adult life; it seldom makes its initial appearance after the age of forty-five. In rare cases it may develop in infancy and has been observed as early as the sixth day of life. Apparent hereditary influence is commonly observed; in a considerable proportion of cases a history of psoriasis in one of the parents may be obtained. Erasmus Wilson



Fig. 60.—Psoriasis gyrata.

estimated the proportion as 30 per cent., and Greenough found it as high as one-third of the cases.

There is no definite constitutional error which can be invoked as a cause. Many patients with psoriasis are robust and plethoric, whereas others are frail and anemic. In quite a number of cases a history of gout, rheumatism, imperfect digestion, or defective renal activity is obtainable, and these conditions are regarded by some as causal. The disease has also been attri-

buted to nervous disturbances occasioned by fright, shock, and like influences.

More recently the view that psoriasis is a parasitic disease has been championed by various writers, and one instance of an apparently successful inoculation has been cited in favor of this proposition. Although the parasitic view of the origin of psoriasis has been gaining adherents, no specific micro-organism has yet been found, and the evidence is not convincing. It



Fig. 61.—Extensive psoriasis in irregular patches.

is possible that the cutaneous lesions are produced by a parasite, but it would appear that some general metabolic disturbance is necessary to render the skin a favorable soil.

Psoriasis lesions not infrequently develop at the site of cutaneous irritation, such as that produced by scratch-marks or pressure of wearing apparel. This occurs only during periods of developmental activity of the eruption, and not during quiescent periods. Scratch-marks in lichen planus will also frequently become the seat of new lesions.

**Pathology.**—The essential changes are a hyperplasia of the rete mucosum, with lateral and vertical increase in the inter-papillary projections. Intercellular edema is present. There is imperfect keratinization, perhaps due to the rapidity of the cell-growth. The presence of air between the horny lamellæ is said to be responsible for the silvery appearance of the scales. Munro claims that one of the earliest changes is the accumulation of leukocytes constituting microscopic dry abscesses between the lamellæ of the psoriatic scales. The papillary blood-vessels are enlarged and there is a cell extravasation into the surrounding tissues. Histologists differ in their views as to whether the primary disturbance is in the epidermis or in the corium.

**Diagnosis.**—Psoriasis, owing to its striking features, is readily recognized, save in poorly marked and aberrant cases.

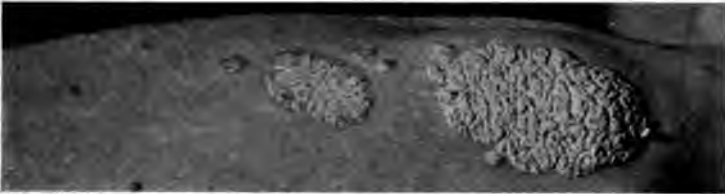


Fig. 62.—Patch of psoriasis showing the imbricated character of scales.

It may be confounded with squamous eczema, the squamous and papulosquamous syphilid, seborrhœa capitis, seborrheic dermatitis, pityriasis rosea, lichen planus, etc. The differential diagnosis between psoriasis and the first three dermatoses is appended in tabular form:

| PSORIASIS.  | SQUAMOUS ECZEMA.   |
|---|--|
| 1. Course chronic.  | 1. Course acute, subacute, or chronic.                   |
| 2. Involves with predilection extensor surfaces.          | 2. Involves with predilection flexor surfaces.           |
| 3. Itching moderate or absent.                            | 3. Itching present, often well pronounced.               |
| 4. Patches sharply defined.                               | 4. Patches fade into healthy skin.                       |
| 5. Patches small and round.                               | 5. Patches large and irregular.                          |
| 6. Eruption always dry.                                   | 6. Commonly history of previous moisture.                |
| 7. Patches covered with profuse, shining, silvery scales. | 7. Patches covered with sparse, small, yellowish scales. |
| 8. Lesions often recurrent.                               | 8. or less rapid changes in                              |



## PSORIASIS.

1. Negative history.
2. No concomitant signs.
3. Knees and elbows frequently involved, palms and soles rarely.
4. Itching variable.
5. Uniformity of lesions, variations in size.
6. Scales abundant, lamellar, and silvery.
7. Beneath scales is an unelevated reddish patch.

## PAPULOSQUAMOUS SYPHILODERM.

1. History of syphilis.
2. Concomitant signs present.
3. Palms and soles commonly involved; elbows and knees rarely.
4. Itching, as a rule, absent.
5. Multififormity of lesions, uniformity in size.
6. Scales scanty and yellowish.
7. Beneath scales is an infiltrated, elevated, dull-red papule.

## PSORIASIS.

1. Occurs upon scalp and body.
2. Eruption in form of patches.
3. Scales dry and silvery.
4. Base inflammatory.
5. Apt to spread beyond hair-border.

## SEBORRHOEA CAPITIS.

1. More commonly confined to scalp.
2. Eruption diffuse; involves entire scalp.
3. Scales greasy and dirty yellow.
4. Base pale.
5. Limited often to hairy scalp.

**Prognosis.**—It is nearly always possible to effect, by one means or another, the disappearance of the eruption. In the vast majority of cases the eruption will return after varying intervals of freedom; this may be weeks, months, or years. Occasionally psoriasis appears to be permanently cured, but neither the character of the case nor the use of any particular remedy enables any one to predict such a result in advance. It is advisable to attack the first lesions of a relapse in order to lessen, as far as possible, extension of the eruption.

**Treatment.**—At the outset it may be said that there is no specific remedy for psoriasis—no set formula which will do well in all cases. There are, however, certain empiric medicaments, both internal and external, which experience has proved to be of distinct value. But these will be found to be useful in some patients and not in others; moreover, a remedy may be efficacious at one time and fail in another attack in the same individual. While there are certain general indications for different therapeutic procedures, yet in the majority of cases the treatment of psoriasis resolves itself into a trial of the recognized remedies, both general and topical. When a treatment is once instituted, it should be given an adequate trial, unless it is found to be doing harm.

If the patient is found to be suffering from any systemic disturbances, it is obviously important to correct such deviations from health. Gout, rheumatism, neurasthenia, anemia, digestive troubles, etc., require treatment directed toward these special conditions. At times such treatment will benefit psoriasis, but in other cases it will fail. Outdoor life, exposure to sunshine, muscular exercise, frequent bathing, are all valuable adjuncts to any therapeutic régime that may be instituted.

As regards *diet*, no dogmatic rule can be established. A frail and anemic girl will obviously require a different diet from a robust, full-blooded man. It is not the disease which should indicate the diet, but the condition of the patient. In general the dietary should be simple, with limitation of nitrogenous articles, more particularly red meats. Bulkley advises a vegetarian diet for psoriatic patients.

Of the internal remedies, *arsenic* has enjoyed the widest reputation. It is doubtful, however, whether its virtues in this disease, as in many other dermatoses, have not been too highly extolled. Arsenic does remarkably well in some cases of psoriasis in which the inflammatory element is not well marked. It should not be used during an acute outbreak or while lesions are small or spreading, for it may stimulate further extension of the eruption.

Arsenic is used chiefly in the form of Fowler's solution and arsenic trioxid. The usual initial dose of the former is one to three minims, and this may cautiously be increased in adults to ten minims three times a day, if such doses be found necessary to influence the disease. The drug should be thoroughly diluted in a half to a tumblerful of water and should be taken during and after the meal, so as to be well mixed with the food.

Arsenic should not be taken over too prolonged periods of time, owing to possible injurious after-effects. Physicians should counsel patients not to take arsenic upon their own responsibility, for it is a remedy potent for evil as well as good. The long-continued use of arsenic may lead to generalized pigmentation, keratoses of the palms and soles, and in rare cases to dangerous cancer of the skin.

*Potassium iodid*, in large doses, has been found useful in this disease. It is, like arsenic, inconstant in its effects and will frequently fail. In some cases, however, it produces excellent results. In a patient under my care with a universal psoriasis of a most inveterate character potassium iodid, increased

gradually to sixty grains three times a day, later supplemented by active local treatment, led to complete disappearance of the eruption. When giving large doses of the iodid it is well to have the patient drink considerable quantities of water; the drug seems thus to be better borne.

The *salicylates*, and particularly *salicin*, are warmly recommended by Crocker, especially in the early stages of psoriasis, when arsenic is contraindicated. Salicin is more often used, as it is better tolerated by the stomach. Crocker usually commences with fifteen-grain doses three times a day and increases to twenty grains. I have used salicin in ten-grain doses in a number of cases without observing much result.

The *alkalis* are efficient in certain cases of psoriasis, particularly in robust individuals with a gouty or rheumatic diathesis. The most eligible preparation is the liquor potassæ in ten- to twenty-drop doses, well diluted. The acetate or citrate of potash, in twenty-grain doses, may also be used with good results. It should be taken in a half tumblerful of water one-quarter of an hour before meals.

*Mercury* by mouth or hypodermatic injection has been used in psoriasis with satisfactory results in some cases. About one-fifth grain of the iodid of mercury three times a day is advised.

Other remedies that have been used at different times with varying degrees of success are thyroid extract (Bramwell), carbolic acid, in doses of from one to four minims three times a day (Kaposi), wine of antimony, in acute cases, five to ten minims (Morris), tar, cantharides, colchicum, pilocarpin, copaiba, etc. Turpentine, ten to thirty minims in emulsion, is advised by Crocker in hyperemic cases. Barley-water in considerable quantity should be taken during the treatment. It is contraindicated by the existence of any kidney trouble.

*Local Treatment.*—An essential preliminary to the inauguration of topical treatment is the removal of the scales. It is useless to make liquid or unguentous applications to an impenetrable mass of scales; they must be removed so that the medicaments may be applied directly to the skin surface. Scales may be removed with ordinary soap and water, by friction with soft soap, or, best of all, by prolonged baths (simple or alkaline) with the use of soap.

The local remedies that enjoy the greatest reputation in

psoriasis are chrysarobin, tar, pyrogallic acid, ammoniated mercury, salicylic acid, resorcinol, betanaphthol, etc.

Chrysarobin, a yellowish powder derived from the Goa powder of the East Indies or from a similar preparation from Brazil, is the most rapidly efficient remedy at our disposal. It has, however, certain grave disadvantages which restrict its use to selected cases. It stains the skin temporarily and the under-clothing permanently. Furthermore, it may set up a severe dermatitis or a conjunctivitis, particularly when used upon the face. It may be safely employed in cases with a limited number of large chronic patches upon the body or extremities. It may be incorporated in an ointment or a paint:

R. Chrysarobini..... gr. x-xl;  
     Pulv. amyli            }  
     Pulv. zinci oxidi } ..... āā ʒij;  
     Petrolati..... ʒiv.—M.

Or—

R. Chrysarobini..... gr. x-xxx;  
     Liquor gutta perchæ (traumaticin) or  
     Collodii flex..... fʒj.—M.

The application should be at first weak, and used only over a limited surface. The ointment is to be applied once or twice daily, the paint every two or three days. The use of the chrysarobin should be interrupted when the skin becomes very red and tender. If too much dermatitis has been set up, a dusting-powder or soothing lotion should be applied. When the patches are sufficiently treated, the psoriatic patch will appear white and smooth, while the surrounding integument is stained purplish-red.

*Tar* is a valuable application, and is usually well borne. Its odor and color are its chief disadvantages. It may be used in the form of an ointment, paint, or bath. The preparations usually employed are the unguentum picis (official tar ointment), oleum cadini (oil of cade), and oleum rusci (oil of birch), in the strength of one to four drams to the ounce:

R. Ung. picis, Ol. cadini, or Ol. rusci ..... ʒj-ij;  
     Adipis or Collodii flex..... q. s. ad fʒj.—M.  
     SIG.—To be used night and morning.

The tar bath is a convenient and efficient method of using this medicament in extensive cases. The patient anoints him-

self with tar ointment and then steps into a warm bath, in which he remains for about a half-hour.

A purified tar oil, anthrasol, has recently been placed upon the market. It is colorless and almost devoid of odor; it may be used in ointment form, one to two drams to the ounce, or in alcoholic solution. In very young subjects and in those with tender skin it is frequently not well borne.

*Pyrogallie acid*, in 5 to 10 per cent. ointments, acts much in the same manner as chrysarobin, though less efficiently. It stains the body linen, and if used over too great an area of the body, may produce fatal poisoning through absorption. This disadvantage has very greatly lessened its use.

*Ammoniated mercury* is a most eligible preparation for the treatment of patches of psoriasis around the face and scalp; it is odorless and does not stain the skin. It may be combined with salicylic acid, as in the following prescription:

|                          |             |
|--------------------------|-------------|
| R. Acidi salicylici..... | gr. xv-xxx; |
| Hydrarg. ammoniat.....   | gr. xx-xxx; |
| Ung. aq. rosæ.....       | 3j.—M.      |

Other preparations of mercury, as the yellow oxid, nitrate, and bichlorid, may be used.

*Resorcin* may also be used on the face in the strength of ten to forty grains to the ounce of lanolin, adeps, or cold-cream ointment.

*Actinotherapy and Radiotherapy*.—Exposure to the rays of the sun or one of the various forms of arc-lamps is of value in psoriasis. More rapid effects, however, are produced by Röntgen irradiation. Psoriasis patches usually respond well to *x*-ray treatment. The cases in which this is especially indicated are those with circumscribed areas of disease that have resisted other therapeutic methods. The technic which I employ is as follows: treatment, twice a week, five to six minutes' duration, medium low tube, ten inches' distance from skin to anticathode, about 4 ampères of primary current (110 volts), and  $\frac{1}{2}$  to  $\frac{2}{3}$  milliampère going to tube. Other parts than the skin involved should be carefully protected. Caution should always be exercised to avoid injurious overtreatment. Occasionally patients have long periods of freedom from the disease after *x*-ray treatment, but exemption from subsequent attacks cannot be more definitely promised than after other approved methods of treatment.

**DERMATITIS EXFOLIATIVA**

*Synonyms.*—Pityriasis rubra; General exfoliative dermatitis.

**Definition.**—Dermatitis exfoliativa is an inflammatory disease of the skin, characterized by intense generalized redness, followed by profuse desquamation, and accompanied by fever and other constitutional symptoms.

Much diversity of opinion exists as to the classification of these exfoliative dermatoses. There are several varieties of



Fig. 63.—Exfoliative dermatitis of several months' duration.

dermatitis with universal scaling which merit separate description and which, indeed, may prove to be distinct clinical entities.

*Pityriasis Rubra (Hebra) Type.*—In this affection, which is extremely rare, the condition is chronic and there is a slow progression, ultimately ending in death, in the vast majority of cases. Of twenty-one patients observed by Hebra and Kaposi, twenty died. The salient features are a generalized redness of a dull color, profuse and continuous exfoliation of the skin in small papery scales, atrophic thinning and contraction of the skin, often leading to ectropion or permanent

flexion of the fingers, and a serious compromising of the general health. The patient is sensitive to cold and often complains of chills. Progressive weakness and visceral disease usually close the scene.



Fig. 64.—Epidermal casts of the palms and soles from a case of exfoliative dermatitis; recurrent attacks (Welch and Schamberg). (Compare with casts from scarlet fever, page 504.)

*Dermatitis Exfoliativa Acuta.*—The onset of the disease is sudden and attended by fever and malaise. The eruption, which consists of an intense erythematous efflorescence, may be either diffuse or in patches. Rapid spreading over the entire body soon occurs, followed in a few days by profuse scaling of

a flaky character, or the superficial epidermis may peel off in strips. Upon the palms and soles the horny skin may be exfoliated *en masse*, as well-marked epidermal casts; when complete, these resemble a pair of gloves or moccasins. In severe cases the hair is sometimes lost and the nails gradually shed. Itching and burning are present in varying degrees. The disease runs its course in a few weeks or months. It is extremely prone to recur, at times exhibiting well-pronounced periodicity. A twenty-nine-year-old man under my observation had, according to his statement, one or two attacks every year since the first year of life. Sometimes this variety of exfoliative dermatitis becomes chronic and lasts for one or more years.

A somewhat different type of the disease, pursuing a more chronic course, is the so-called *secondary exfoliative dermatitis*; this develops at times during the progress of a long-standing eczema, psoriasis, or lichen planus.

**Etiology.**—The cause of pityriasis rubra is unknown. It is more common in adult life and in males. Acute exfoliative dermatitis is in all probability the result of an acute toxemia or poisoning. It is simply an intensified form of scarlatinoid erythema, differing therefrom only in degree. Both conditions may occur in the course of septicemia, small-pox, malaria, and other infectious diseases. Drugs, particularly quinin, may be responsible. I recall a severe case in which the hair and nails were lost following the ingestion of large doses of antipyrin. Some of the secondary forms may be due to too severe local treatment. The use of chrysarobin, arnica, and mercurial ointment has been known to call forth a general exfoliative dermatitis.

**Treatment.**—Internal treatment, if necessary, must be based upon individual indications. The patient should be confined to bed and placed upon a bland diet. Locally, such applications as are applied in an acute eczema should be used, as, for instance, the Resorcin-lime-water-olive-oil lotion.

### PITYRIASIS ROSEA

**Synonyms.**—Pityriasis maculata et circinata; Herpes tonsurans maculosus.

**Definition.**—A self-limited inflammatory disease of the skin, characterized by rose-colored, erythematous, ring-shaped patches occupying chiefly the trunk, and accompanied by mild constitutional disturbance.



**Symptoms.**—The disease is often ushered in by elevation of temperature ( $100^{\circ}$ – $102^{\circ}$  F.), with malaise and the associated expressions of fever. A primitive patch may precede the general eruption by a few days to a week. The eruption comes out more or less rapidly, so that in the course of a week or ten days the trunk and thighs, which are the seats of predilection, may



Fig. 65.—Pityriasis rosea; well-pronounced eruption.

be profusely covered. The lesions consist of pinkish or rose-colored macules and maculopapules, which increase in size by peripheral extension, many reaching the dimensions of a silver half-dollar. The patches are often oval, their long axes corresponding to the lines of cleavage. Central involution occurs in many patches, giving them an annular or circinate configuration. At this stage the typical lesion presents a

yellowish or fawn-colored center, with a pinkish, slightly elevated border covered with furfuraceous scales.

The eruption is ordinarily limited to the trunk, thighs, and arms, being either absent or sparse on the legs and forearms. It may extend upon the neck, but is rarely, if ever, seen upon the face. A variable amount of glandular enlargement may be present.

The disease runs its course in from two to eight weeks, the average case lasting about six weeks. There are recorded instances of durations of three, four, and even six months.

Itching is moderate, but in some cases may be severe, particularly at night.

**Etiology.**—The cause is obscure. Neither sex nor age appears particularly to influence it. Crocker, Zeisler, Fordyce, and Fox have each observed two cases in the same family. If transmissible, the contagion must be feeble. The self-limitation of the disease and the rarity of recurrences suggest that some antitoxic principle is produced in the body.

**Diagnosis.**—The acute onset, the rapid extension over the body, the extreme superficiality of the lesions, their peculiar shape and coloration, the definite course and spontaneous involution, will usually enable one to make the diagnosis. Pityriasis rosea must be distinguished from seborrheic eczema, the maculopapular syphilid, psoriasis, and tinea circinata.

*Seborrheic eczema* presents at times a strong resemblance. It may be differentiated usually by the involvement of the scalp, the preference for the sternal and interscapular region, the slower extension, larger and more greasy scales, absence of typical oval lesions and of self-limitation.

Confusion with *syphilis* would be apt to occur before the development of the characteristic yellowish circinate patches of pityriasis rosea; when these features appear, the diagnosis is cleared up.

Patches of *psoriasis* are slower in development and extension, the scales are more profuse and more silvery, and the scalp and extensor surfaces are preferred. *Ring-worm* would rarely be seen in extensive patches on the trunk. The patches are round or oval, and the border sharply defined. Under the microscope the ring-worm fungus can be found.

**Prognosis.**—Always favorable. The eruption usually disappears spontaneously in from four to six weeks.

**Treatment.**—The course of the disease and the

the eruption are, as a rule, not greatly influenced by treatment. There are, however, exceptions to this general statement. There are no internal remedies of any special value, although Crocker advises salicin. Locally mildly stimulating and antiseptic ointments may be employed, such as—

R. Betanaphthol ..... gr. xl;  
Adipis benzoat..... ʒj.—M.

Or sulphur may be used in the same strength. When there is much itching, the following lotion will be found useful:

R. Acidi phenici ..... ʒj;  
Glycerini ..... fʒj;  
Ext. hamamelidis dest. .... fʒj;  
Aquæ ..... q. s. ad fʒviiij.—M.

### ERYSIPELAS

*Derivation.*—'Ερυθρός, red; πέλλα, the skin. *Synonyms.*—St. Anthony's fire; Ignis sacer.

**Definition.**—Erysipelas is an acute specific inflammation of the skin and subcutaneous tissue, characterized by shining redness, swelling, heat, pain, and vesication, and accompanied by fever and constitutional disturbance.

**Symptoms.**—The disease is usually ushered in with a chill, malaise, headache, and elevation of temperature (102°–105° F.). The tongue is dry and coated, later becoming brown and fissured. The fever exhibits morning remissions and evening exacerbations. Sudden rises of temperature usually betoken an extension of the erysipelatos process. Headache, vomiting, somnolence, and delirium are present in severe cases. Albumin and casts are usually found in the urine.

The erysipelatos eruption, which begins at or near the site of the infection, is highly characteristic. The affected area is at first small, with defined border, swollen and elevated, and of a shining crimson-red or violaceous color. Palpation discloses tenderness, heat, tenseness, and induration to the edge of the redness. The amount of swelling depends somewhat upon the region involved. When the eyelids are affected, there is tremendous swelling, making it utterly impossible for the patient to open his eyes. Where the skin is firmly bound down, as upon the scalp, there is but moderate swelling.

The disease spreads insidiously by peripheral extension in several directions, the red, raised border marking the advance

of the process. The invasion of new localities is accompanied by involutional changes in older areas. The eruption in any one region runs its course in four or five days, ending in desquamation.

In the center of the patches it is quite common to observe flat vesicles or blebs; these may be small and barely visible, or the bullæ may be large, irregular, and confluent. They contain at first a clear serum, but this is prone to become purulent and dry in the form of crusts.

No part of the cutaneous surface enjoys freedom from attack, although the face is by far the most frequently affected region. In facial attacks the eruption may spread over the scalp to the nape of the neck, although Boston and Blackburn found records of this extension in only 7 out of 485 cases. The scalp, when affected, is observed to be red, boggy, and extremely tender to the touch.

In a severe erysipelas involving the entire face the patient presents an awful picture: the eyelids are bulged and swollen, the lips protruded, the ears enormously tumefied, and the entire head enlarged beyond human proportions. Heat, burning, and itching are often complained of.

Convalescence is indicated by a decline of temperature and subsidence of swelling, induration, heat, and redness. In rare instances one, two, or more relapses occur.

An average attack of erysipelas runs its course in a week or ten days, but extension may protract the disease to two, three, or more weeks. The patient is usually weak and prostrated after the attack. The hair falls out after involvement of the scalp, but is ultimately restored. Frequent attacks in the same region may lead to elephantiasic thickening of the skin and subcutaneous tissues. This occurs chiefly upon the face and legs.

*Erysipelas ambulans* or *migrans* is a variety which tends to subside rapidly in one region, reappearing in another, the whole process continuing for several weeks.

There is a *mild recurrent form of erysipelas* which is prone to attack the cheeks and the alæ of the nose. The constitutional disturbance is slight (temperature, 99° to 100° F.) or entirely absent. The eruption does not tend to spread beyond the cheeks, and usually disappears in three or four days. It is due to microörganismal infection through the mucous membranes of the adjacent cavities, particularly the nose.

**Etiology.**—The affection is due to the introduction into the body of a specific organism, the *Streptococcus erysipelatis* of Fehleisen. It is possible that other pyogenic organisms may produce inflammations resembling erysipelas. The germs gain entrance through obvious or imperceptible solutions of continuity of the skin or mucous membranes. The existence of a wound, therefore, is a strong contributory factor. Any age may be attacked, but the disease is most common between the ages of twenty and fifty. The resisting power of the individual to microbic infection must play an important rôle, for many persons carry streptococci on their skin. Alcoholic intemperance, debility, Bright's disease, etc., are predisposing causes. Erysipelas is not an uncommon complication of small-pox. In surgical wards of hospitals erysipelas, at times, occurs in epidemics.

**Diagnosis.**—Facial erysipelas is chiefly to be distinguished from an erythematous eczema of this region. In the latter disease there is marked redness, with often great swelling and closure of the eyelids. The itching, however, is pronounced, and there is absence of the fever and accompanying constitutional symptoms so constant in erysipelas. In erysipelas, too, the skin is firmly indurated, elevated, and glazed, and has a sharply defined border.

**Prognosis.**—The vast majority of cases of erysipelas terminate in recovery. In rare instances abscesses or gangrene may develop. In cases of great severity death may occur, particularly in the aged, in infants, in drunkards, and in those debilitated from other diseases.

**Treatment.**—The large number and variety of remedies advocated in this disease is evidence that no one treatment has satisfied the intelligent demand of physicians in general. The capricious course of the affection and the unexpected changes frequently observed have doubtless caused credit to be given to remedies which are practically inert.

It is important to maintain the patient's strength by a nutritious and easily assimilable diet. Such supportive remedies as whisky, wine, strychnin, digitalis, etc., are often necessary. The drug which has the greatest number of advocates is the tincture of the chlorid of iron; this is given in ten- to twenty-minim doses every few hours. Camphor has also been warmly extolled. Some writers have reported results from the use of antistreptococcus serum.

Locally, almost every remedy in the pharmacopeia has been advised. Ichthylol in ointment or lotion is the most popular application:

R. Ichthylol. .... 3j-ij;  
 Lanolini }  
 Adipis benzoat. } ..... āā 3iv.—M.

Hot or cold applications of lead-water and laudanum are grateful to the patient. In a serious relapsing case seen by the author the mild use of the x-rays was followed by a rapid subsidence of the process.

In the recurrent form the nose and mouth should receive careful treatment, detergent washes, such as Dobell's solution, being employed.

#### ERYSIPELOID (Rosenbach)

*Synonyms.*—Erysipelas chronicum; Erythema migrans.

**Definition.**—Erysipeloid is an inflammatory affection of the skin, resembling, to some extent, erysipelas, produced by infection with decomposing animal matter.

**Symptoms.**—There are, as a rule, no constitutional symptoms. The disease begins as a dark-red or violaceous, sharply margined patch at the site of infection. The skin is tense and slightly tumefied. The fingers and hands are the common seats of the eruption. A gradual peripheral extension takes place, always with a deep-red, defined border. The spreading is much slower and less extensive than in erysipelas. Only in rare cases does the eruption extend beyond the wrist.

A variable degree of heat, pain, burning, and itching is present. The eruption appears usually about forty-eight hours after infection, but the incubation may be much shorter. The condition lasts from one to six weeks, and disappears without desquamation.

**Etiology.**—The affection is due to poisoning with decomposing animal matter: it is usually observed upon the hands of fish-dealers, butchers, scullions, etc. The infection gains entrance through a wound. Gilchrist, who recorded 329 cases occurring in Baltimore, states that all but 6 were due to crab-bites. Rosenbach regarded a microorganism belonging to the family of cladothrix as the cause, but Gilchrist's studies failed to confirm this finding.

**Treatment.**—The disease is readily amenable to antiseptic treatment. Gilchrist advises a 25 per cent. salicylic acid ointment applied over and beyond the affected area. I have used with good results a 25 per cent. ichthyol ointment.

### DERMATITIS

**Definition.**—Dermatitis, or inflammation of the skin, is a cutaneous disorder characterized by heat, redness, pain, and swelling—in other words, by the ordinary phenomena of inflammation. The term is here restricted to acute inflammations the result of known irritants. For purposes of classification and study several varieties of dermatitis are distinguished: (a) Dermatitis traumatica. (b) Dermatitis calorica. (c) Dermatitis venenata. (d) Dermatitis medicamentosa. (e) Dermatitis gangrenosa.

#### DERMATITIS TRAUMATICA

Under this head are included all forms of inflammation the result of mechanical violence to the skin, such as contusions, lacerations, and excoriations (due to friction, scratching, etc.). The traumatism produced by scratching is of especial importance to the dermatologist.

#### DERMATITIS CALORICA

This form of dermatitis is due to exposure to excessive heat (dermatitis ambustionis, burn) or to excessive cold (dermatitis congelationis, frost-bite, chilblain). In both forms we have, according to the severity of the inflammation, erythema, vesication, or gangrene, accompanied by severe pain. Burns and frost-bites, being in the nature of emergency accidents, are more commonly regarded as surgical conditions.

**Treatment of Burns.**—Ichthyol, 3j; petrolatum, 3j. Carron oil (equal parts of linseed oil and lime-water). Acidum carbolicum, gr. x; acidum boricum, gr. xxx; petrolatum, 3j. Powder or solution of bicarbonate of soda. One per cent. solution of picric acid has, in my experience, acted admirably for superficial burns, particularly when applied soon after the accident.

**Treatment of Frost-bite.**—Rubbing with snow. Stimulating applications, such as turpentine, camphor, iodine, ichthyol, and carbolyzed oil.

## DERMATITIS VENENATA

Dermatitis venenata is due to contact with deleterious mineral and vegetable substances. Among these may be mentioned acids or alkalis, Croton oil, mustard, arnica, mercury, chrysarobin, formalin, cantharides, anilin dyes, etc. The dermatologist is more interested in the dermatitis produced by poisonous plants, chiefly the *Rhus toxicodendron* (poison ivy), the *Rhus venenata* (poison sumac or dogwood), and *Rhus diversiloba* (poison oak). Within recent years attention has been called to the frequency of dermatitis resulting from contact with



Fig. 66.—Dermatitis venenata due to poison ivy.

the *Primula obconica*, or *primrose*, a flowering hot-house plant much in vogue, particularly during the Easter and Christmas seasons. The recurrent attacks of dermatitis upon the face and hands are apt to be interpreted as eczema.

A great variety of plants have been found capable of producing a dermatitis in susceptible individuals. These have been described in a valuable book on "Dermatitis Venenata," by Dr. J. C. White, of Boston.

The poisonous principle is believed to be a volatile substance in



**Symptoms.**—From a few hours to several days after exposure the hands, face, and genitalia, in a typical case, become the seat of innumerable closely studded vesicles and blebs, accompanied by redness, swelling, and great burning or itching.



Fig. 67.—Dermatitis venenata (ivy-poisoning).

The vesicles and blebs are at times angular or stellate, and not infrequently appear in linear streaks. The eruption may be carried to various parts of the body by autoinoculation. The dermatitis lasts from one to four weeks. Some individuals



Fig. 68.—Dermatitis venenata from contact with powdered bichlorid of mercury.

are extremely susceptible to plant-poisoning—so much so that proximity without contact suffices to bring on an attack. Other individuals enjoy comparative immunity. Some persons are susceptible at one period of life and become immune later, or the converse of this may be true.

When the face is involved, the eyelids are greatly swollen and the affection may simulate an erysipelas in appearance; the absence of high fever and other systemic symptoms will readily exclude the latter disease. In some cases considerable difficulty will be experienced in distinguishing rhus-poisoning from an acute eczema. History of previous similar attacks, exposure to plants, the presence of numerous closely aggregated pin-point-sized vesicles, and the more rapid involution will distinguish the dermatitis from a common eczema.

The **treatment** of plant-poisoning does not differ essentially from that of an acute vesicular eczema. The following combination has yielded most satisfactory results:

|                         |                  |
|-------------------------|------------------|
| R. Acidi borici .....   | ℥j;              |
| Resorcin. ....          | ℥j;              |
| Sodii hyposulphit. .... | ℥ij;             |
| Glycerini .....         | ℥ij;             |
| Zinci oxidi .....       | ℥j;              |
| Aquæ .....              | q. s. ad ℥vj.—M. |

Wet compresses of a solution of sodium hyposulphite, one dram to the ounce, are also useful. Likewise, saturated solution of boric acid, equal parts of black-wash and lime-water, bromin in olive oil, ten minims to the ounce, carbolated zinc ointment, and a host of other remedies.

### DERMATITIS MEDICAMENTOSA

#### (DRUG ERUPTIONS)

This class includes eruptions due to the ingestion or absorption of medicaments. Drug eruptions are favored by—(a) idiosyncrasy; (b) excessive cutaneous elimination; (c) imperfect renal and intestinal elimination (often due to renal or cardiac disease); (d) large doses; (e) long-continued administration. Individual susceptibility is the most important factor. The eruption may be macular, papular, vesicular, urticarial, bullous, or hemorrhagic.

*Acetanilid* in large or long-continued doses may produce cyanosis. It occasionally causes an erythematous or erythematopapular rash.

*Antipyrin*.—Out of 52 cases collected by Spitz, 41 were morbilliform, 4 urticarial, and 7 erythematopapular. Eruptions prone to itch and desquamate. I have seen a severe exfoliative dermatitis with loss of nails and hair follicles in doses of antipyrin.

*Arsenic.*—Urticarial eruption most frequent; may, however, be erythematous, papular, or vesicular. Extensive pigmen-



Fig. 69.—Exfoliative dermatitis following the administration of large doses of anti-pyrin. Hair and nails shed.

tation may follow long-continued use of arsenic; herpes zoster thought to be produced by it at times. Hyperkeratosis of



Fig. 70.—Bullous eruption, resembling pemphigus, from the ingestion of bromids.

the palms and soles may result from long-continued use and may eventuate in serious cutaneous cancer. Arsenical eruptions are relatively uncommon.

*Belladonna*.—Erythematous eruption resembling scarlatina. Not uncommon.

*Boric Acid and Sodium Borate*.—Rare. Erythematous, with small vesicles. Continued use may cause dry, scaly eruption with loss of hair.



Fig. 71.—Pustulobullous eruption, resembling small-pox, from the ingestion of bromids.

*Bromin and Bromids*.—Pustular (acneiform) eruption is the most frequent type. In children, large, brownish-red,



Fig. 72.—Bromid eruption.

button-like nodules are not uncommonly seen and are quite characteristic. Bromid eruption may appear after the ces-

sation of the administration of the drug. An infant may absorb the drug through the maternal milk. Less common are macular, papular, urticarial, and bullous eruptions.

*Cantharides*.—Erythematous and papular eruptions, chiefly about genitals. Rare.

*Capsicum*.—Erythematous eruption. Rare.



Fig. 73.—Copaiba eruption; the eruption closely resembled that of measles, except on face and neck, where the lesions presented an urticarial appearance.

*Chloral*.—A scarlatinoid erythema, with subsequent desquamation, may occur. More rarely urticarial, papular, or vesicular lesions.

*Copaiba and Cubebs*.—Not uncommon; most rashes following the combined use of these two drugs are due to the copaiba. Most common is a morbilliform rash strongly resembling measles. May also be scarlatinoid or urticarial, or, in rare cases, vesicular, bullous, or petechial.

*Digitalis*.—Rare. Scarlatiniform or maculopapular.

*Ergot*.—Rare. Vesicular, pustular, bullous, petechial, or gangrenous lesions.

*Iodin and Iodids*.—The pustular acneiform eruption, like that caused by bromids, is common. Bullous, erythematous, urticarial, hemorrhagic, papillomatous, and gangrenous lesions may rarely develop. As with the bromids, the eruption may appear after the drug has been discontinued.

*Iodoform*.—Absorption from wounds may cause grave symptoms and erythematous, papular, vesicular, bullous, or petechial eruptions.

*Mercury*.—Uncommon. Erythematous.

*Opium and its Alkaloids*.—Uncommon. Itching erythematous rash, resembling measles or scarlet fever. At times urticarial.

*Potassium Chlorate*.—Rare. Macular and papular eruption.

*Quinin, Cinchona, etc.*—Most frequently erythematous, resembling scarlet fever. May be accompanied by some fever, and when eruption is well marked it is followed by pronounced desquamation. Throat is reddened, but not edematous. Of 60 quinin eruptions analyzed by Morrow, 38 were erythematous, 12 urticarial, 5 purpuric, and 2 vesicular and bullous.

*Salicylic Acid Group*.—Occasional. Erythematous and scarlatiniform, sometimes followed by desquamation. May be urticarial, purpuric, vesicular, or bullous.

*Strychnin*.—Scarlatiniform rash once observed.

*Sulphonal*.—Uncommon. Macular and erythematous. Rarely purpuric. The author observed a giant urticaria with great swelling of face follow a twenty-grain dose in an alcoholic.

*Thallium Acetate*.—Experimental administration in animals has caused patchy baldness.

*Turpentine (Terebene)*.—Uncommon. Erythematous, vesicular, and papular eruptions.

*Veronal*.—I have observed eruptions closely resembling the rashes of scarlet fever and measles. The scarlatinoid rash was accompanied by fever.

#### DERMATITIS GANGRAENOSA

*Synonym*.—Sphaceloderma.

Gangrene of the skin may result from a variety of causes. Heat, cold, and diverse local irritants, when applied in their

most intense form and continued sufficiently long, produce cellular death and gangrene. Most other forms of gangrene are of blood-vessel origin, either the result of endarteritis, embolus, or thrombus, or are due to vasomotor disturbances associated with morbid nervous or trophic troubles. Several distinct varieties of gangrene of the skin are recognized: (1) Multiple gangrene of the skin; (2) neurotic or hysteric gangrene; (3) disseminated gangrene in infants; (4) symmetric gangrene (Raynaud's disease); (5) diabetic gangrene.

*Multiple gangrene of the skin* may occur in the course of many infectious diseases, particularly typhoid fever. I have seen it in small-pox and scarlet fever. Osler records its occurrence in malaria. It may also develop independently of such diseases.



Fig. 74.—Multiple idiopathic gangrene. Recurrent outbreaks for a number of years.

*Neurotic or hysteric gangrene* is a variety in which recurrent outbreaks occur, often leading to progressive loss of skin and mutilation of members. Some of the lesions are doubtless due to central nerve lesions, while others are probably self-produced.

#### DERMATITIS GANGRAENOSA INFANTUM

*Synonyms.*—Varicella gangrænosa; Multiple disseminated gangrene of the skin in infants.

**Definition.**—A gangrenous affection following varicella and other pustular affections in children.

**Symptoms.**—Following in the wake of varicella, small-pox, or simple pustular dermatoses there occur crusted pea- to coin-sized pustules with inflammatory areolæ, somewhat resembling vaccine lesions. In a short time the crusts are thrown off with

a slough, leaving a distinct ulceration. There may be fever, vomiting, diarrhea, lung complications, and symptoms of pyemia. Indelible scars are left.

**Prognosis.**—Guarded. Depends upon age, number of lesions, and character of complications.

**Treatment.**—Supportive. Crocker advises quinin in one- or two-grain doses in milk every four hours. Complications should be treated as they arise. Locally, antiseptic applications.

### SYMMETRIC GANGRENE

*Synonyms.*—Raynaud's disease; Local asphyxia; Spontaneous gangrene.

**Definition.**—A local arterial ischemia, generally followed by asphyxia, occurring at the periphery of the circulation, and producing symmetrically distributed gangrene of the skin and other tissues in the affected region (Crocker).

**Symptoms.**—The disease usually attacks the fingers and toes, although the nose and ears are also occasionally affected. With or without preceding pain and numbness, the parts become cold and whitish. After a variable persistence of this stage, local asphyxia develops, characterized by lividity, bluish discoloration, and at times swelling and pain. The symptoms in this stage often exhibit marked change from time to time. In most cases the disease goes on to the terminal stage of gangrene, the sphacelated tissues being cast off, leaving granulating wounds. Some cases continue for a long time with persistently livid fingers and toes without the development of gangrene, though even in these cases relapses are the rule.

When the patient is debilitated or the affected areas large, death may result.

**Etiology.**—Exposure to cold is the most frequent cause. The affection has been observed to follow diphtheria, typhoid fever, scarlatina, measles, malaria, syphilis, tuberculosis, and diabetes.

**Prognosis.**—In extensive cases in the very old or young the prognosis is serious. When the affected areas are small, the prognosis is good, but there is tendency to recurrence.

**Treatment.**—When seen early, galvanism with one electrode applied to the spine and the other immersed with the affected part in water, is the best treatment. Friction with stimulating liniments, as for frost-bites, is also of value.



**DIABETIC GANGRENE**

In advanced cases of diabetes mellitus localized cutaneous gangrene may occur. The process is apt to begin as a bleb, which dries, forms a crust, and is thrown off with the underlying sphacelated skin, leaving a granulating ulcer. The process is apt to attack the middle of the extremities (calves, etc.) rather than the fingers or toes.

**FEIGNED ERUPTIONS (DERMATITIS FACTITIA)**

Feigned or artificial eruptions are self-produced, with the idea of gaining exemption from work or of exciting sympathy and charity. They are seen most frequently in subjects of hysteria, in paupers seeking admission to institutions, and in soldiers



Fig. 75.—Self-produced eruption in a hysteric subject.

and sailors who desire their discharge from service. A hysteric woman will frequently submit to all sorts of treatment, even amputation of a limb, without revealing her agency in the production of the lesions.

The dermatitis may be erythematous, bullous, or gangrenous, and is produced by acids, caustics, friction, etc. The peculiarities of feigned eruptions are: (a) Their oddity or deviation from ordinary types of skin diseases; (b) their sharp definition; (c) their limitation to regions accessible to the hands. By

applying a fixed dressing, such as a plaster-of-Paris bandage that cannot be disturbed, the nature of the condition may often be determined.

### FURUNCULUS

*Derivation.*—L., *furunculus*, a knave. *Synonyms.*—Boil; Furuncle.

**Definition.**—A furuncle is an acute circumscribed inflammation of a cutaneous gland or hair-follicle, ending in suppuration and the extrusion of a central necrotic mass.

**Symptoms.**—A furuncle begins as a painful induration in the skin which gradually approaches the surface, showing itself as a rounded or acuminate reddish prominence.

The boil may have its origin deep in the skin and the subjacent tissues, or it may begin comparatively superficially. In the former instance it may sometimes be felt before it is seen as a circumscribed nodular tumefaction. Soon the overlying skin becomes reddened and edematous; when suppuration is imminent, the central summit begins "to point" and becomes yellowish. When accidentally or intentionally opened, the furuncle gives exit to a thick yellowish pus, often commingled with blood, from the rupture of capillaries. The discharge continues for a few days, after which the abscess cavity is filled by granulation. In some cases a greenish-yellow "core," consisting of partially disorganized and necrotic tissue, is extruded, after which prompt healing takes place.

The more superficial furuncles consist of small conical lesions with a pustular apex and reddish infiltrated base, the former being penetrated by a hair. When the pus is evacuated, the furuncle rapidly disappears. Around one boil as a focus numerous satellites are prone to appear. This may result from external autoinoculation or intradermic transmission through lymphatic channels.

The most frequent seats of furuncles are the back of the neck, buttocks, face, and axillæ, but lesions may occur upon any portion of the body.

Furuncles have their seat about hair-follicles, sebaceous glands, or sweat-coils: the last-named variety is chiefly observed in the axillæ and anogenital regions.

*Furunculosis* is a condition in which there are intermittent outbreaks of boils extending over a period of weeks, months, or years.

**Etiology.**—Boils are due to infection of the skin with pyo-

genic microorganisms, particularly the *Staphylococcus aureus*. Inasmuch as this and other organisms are usually present upon the normal skin, other etiologic factors must be coexistent. The cutaneous soil must be favorable to the noxious activity of staphylococci. The resisting power of the skin is especially lowered by such diseases as diabetes, enterocolitis in children, Bright's disease, gout and its associated states, anemia, etc., and after the exanthematous and other fevers. Furunculosis and abscess formation are almost constant complications of severe small-pox.

Localized eruptions of boils are usually the result of traumatic injury of the skin. The friction of frayed collar-bands makes the nape of the neck a favorite seat; boils on the buttocks are common in equestrians. The scratching in eczema, scabies, and other itching dermatoses frequently causes the production of boils. Boils are commonly observed in association with prickly-heat in infants suffering from intestinal troubles. It is probable that some cases of recurrent boils are due to infection from pyogenic foci in the body; thus chronic dental abscesses have been alleged to cause the persistent continuance of boils. Furuncles may result from the administration of iodids; they may also occur in those working in paraffin, petroleum, and tar.

**Pathology.**—Boils develop about hair-follicles, sebaceous and sweat-glands. The *Staphylococcus aureus* is the chief offending organism. Through bacterial toxins, intense inflammation, or thrombotic obstruction, vascular nutrition is compromised and a necrosis *en masse* takes place. Unna believes that most furuncles begin as a follicular impetigo, the cocci gradually extending along the hair to the base of the follicle and to the sebaceous glands.

**Diagnosis.**—The ordinary characteristics of boils are too well known to require elucidation; the differentiation of carbuncles will be considered under that head.

**Prognosis.**—One or several localized furuncles respond rapidly to treatment. In recurrent furunculosis much depends upon ability to remove the cause. Though refractory, most cases are ultimately cured.

**Treatment.**—Apart from local remedies, the patient is to be treated rather than the disease. The urine should be carefully examined to determine the presence or absence of sugar and albumin. Gouty patients should be dieted and given

alkalis. Anemic and debilitated persons require good food, proper hygiene, and tonics. Cod-liver oil is useful in such cases. In refractory cases change of climate and sojourn at health resorts should be tried.

Many of the remedies credited with antifuruncular virtues are disappointing. Calcium sulphid, which, in  $\frac{1}{10}$  to  $\frac{1}{5}$  grain doses, has been highly extolled, is usually of no value. Arsenic will fail to accomplish good in most cases. Fresh brewers' yeast, a teaspoonful to a tablespoonful several times a day, has been reintroduced in the treatment of boils, and Löwenberg, Crocker, and Brocq speak highly of it in some cases. I have seen good results in ordinary furunculosis, but have failed with the yeast in the furunculosis accompanying small-pox. Sulphur preparations internally likewise failed completely.

Careful examination should be made for chronic dental abscesses and other purulent foci in the body.

*Local Treatment.*—Single lesions should be incised and evacuated as soon as the first evidence of suppuration occurs, but not before. Squeezing and excessive digital manipulation should be avoided, as they may increase the size of the lesion. Abortive applications, such as carbolic acid, nitrate of silver, tincture of iodine, sometimes succeed, but often fail; they may, however, do good as counterirritants. Crocker advises, to abort the lesion, the injection beneath the boil of five drops of a 3 per cent. solution of carbolic acid.

In lesions at the nape of the neck which are rubbed by the collar great comfort and protection are secured by wearing a 25 per cent. ichthyol plaster.

When suppuration threatens, an excellent method is to apply hot boric acid or 1 : 4000 bichlorid of mercury compresses covered with oiled silk. The use of this lotion upon the surrounding skin lesions lessens the liability to further follicular infection.

If one prefers, the surrounding skin may be sopped with a weak bichlorid solution. In refractory localized furunculosis the x-rays are of distinct value. (For technic see special chapter.)

*Opsonic Treatment.*—The treatment of furunculosis with injections of sterilized emulsions of the organisms cultivated from the lesions (usually staphylococci), has, in general, given better results than any other method of treatment, which has been recently elaborated.

for its object the raising of the specific defensive power of the individual against the offending microorganisms.

### CARBUNCULUS

*Derivation.*—Diminutive of *L., carbo*, a live coal. *Synonyms.*—Anthrax benigna; Carbuncle.

**Definition.**—Carbuncle is an acute phlegmonous inflammation of the skin and subcutaneous tissue, characterized by multiple foci of necrosis and sloughing of the superimposed integument.

**Symptoms.**—There is, as a rule, but one lesion present, having for its seat of predilection the neck or back. It begins as a flat, painful infiltration, varying in size from a chestnut



Fig. 76.—Carbuncle.

to an orange. The skin is of a violaceous hue and board-like. At the end of a week or ten days the overlying integument sloughs in numerous points, exposing to view grayish-yellow necrotic masses from which a sanious pus exudes. This cribriform appearance is characteristic of carbuncles. Later, the entire superjacent skin becomes gangrenous, and, being thrown

off with the necrotic masses, leaves a gaping ulceration which heals up by granulation, with the production of a permanent scar.

The process is usually accompanied by chill, fever, and prostration. In the old and debilitated a fatal septicemia may develop.

**Etiology.**—Occurs usually after the fortieth year. The same predisposing causes are operative, as in furuncle—namely,



Fig. 77.—Carbuncle with surrounding eczema.

diabetes, general debility, etc. The exciting cause is the introduction into the skin of a pyogenic microorganism.

**Pathology.**—The process begins in the subcutaneous tissue. Suppuration occurs simultaneously in numerous adjacent foci. The skin and subjacent tissues are enormously swollen and have imbedded in them the yellowish-white necrotic plugs. The process extends laterally and vertically, and ends in a gangrene of the entire area.

**Diagnosis.**—In the beginning only may furuncle and carbuncle be confounded:

## CARBUNCLE.

1. Occurs usually in late adult life.
2. Slow in development and involution.
3. Chestnut to orange size.
4. Surface flat.
5. Skin board-like or brawny.
6. Multiple suppurating openings.
7. Terminates in gangrene.
8. Constitutional disturbance.

## FURUNCLE.

1. Occurs at any age.
2. Comparatively rapid in development and involution.
3. Pea to cherry size.
4. Surface round or conical.
5. Ordinary inflammatory induration.
6. Single opening.
7. Heals after extrusion of "core."
8. As a rule, absent.

**Prognosis.**—Favorable, except in the aged and debilitated and in diabetics and alcoholics. Carbuncle upon the head or face is more serious than in other localities.

**Treatment.**—Various methods have been employed. Most authors favor parenchymatous injections of strong caustics rather than making crucial incisions. Crocker recommends the injection of glycerin and carbolic acid, one to two or four, as soon as suppuration begins. Woods, Taylor, and Manley advise the injection of pure carbolic acid into various portions of the sloughing area. The resulting pain is of but short duration. The stick of caustic potash may be bored into the openings of the carbuncle. After gangrene has occurred, antiseptic fomentations, such as hot boric-acid compresses, are useful. When septicemic symptoms become marked, it is justifiable to excise the entire affected area. This is usually followed by prompt improvement in the symptoms.

Nutritious food and stimulants are necessary to sustain the strength. Morphine and chloral are often demanded to relieve pain and produce sleep.

The opsonic treatment has been highly lauded in the treatment of carbunculosis.

## EQUINIA

*Derivation.*—*L., equus*, a horse. *Synonyms.*—Glanders; Farcy.

**Definition.**—Equinia is a contagious specific disease derived from the horse, characterized by constitutional disturbance and lesions of the respiratory and cutaneous surfaces. The disease is very rare in the human subject.

**Symptoms.**—The site of inoculation when cutaneous is marked by an inflammatory papule or pustule, which soon degenerates into a ragged, undermined, spreading ulcer, with accompanying lymphangitis and glandular swelling. Later,

numerous cutaneous and subcutaneous nodules develop, which break down and discharge (farcy-buds). There is usually nasal ulceration, with a foul-smelling discharge. Most cases run an acute course, ending in death. Those that last several months may recover. The constitutional symptoms are fever, prostration, joint pains, and a typhoidal state.

**Etiology and Pathology.**—The disease is due to the glanders bacillus (*Bacillus mallei*). Stablemen and others coming in contact with horses are the usual victims.

**Prognosis.**—In the acute form nearly all die; in the chronic form 50 per cent. recover.

**Treatment.**—Destruction of lesion by curet, knife, or caustics. In chronic cases quinin in large doses and stimulants. Injections of mallein have been successfully employed in several cases.

### ANTHRAX

*Synonyms.*—*Pustula maligna*; Charbon.

**Definition.**—Anthrax is a specific disease produced by the *Bacillus anthracis*, characterized by a gangrenous, carbuncle-like cutaneous lesion.

**Symptoms.**—The lesion, which is nearly always single and which is usually situated upon the face, neck, or hand, begins as an extremely painful papule. This is rapidly converted into a hemorrhagic vesicle or bleb, which soon becomes pustular. There is intense inflammation, quickly terminating in the formation of a depressed gangrenous eschar. On the border of this, a ring of large firm vesicles commonly develops. The surrounding skin is hard, infiltrated, and edematous, and this may spread considerably beyond the infected area.

The constitutional symptoms consist of chill, vomiting, prostration, fever—104° F. or more—and pains in the head and bones. Later there may occur typhoidal symptoms, and death in two or three days. Mild cases of anthrax may exhibit comparatively little fever and systemic depression.

**Etiology.**—The disease is more often derived from the hides or bodies of animals affected with splenic fever than from the living animals themselves; most of the patients observed in cities are employees in leather factories: morocco workers, butchers, tanners, and wool-sorters are the usual victims.

**Pathology.**—The exciting cause is the *Bacillus anthracis*, which, after a few days, may be found in the organs, secretions, and, at times, in the blood.



**Diagnosis.**—The distinctive features are a gangrenous patch with vesicular border, surrounded by great edema and infiltration, and severe constitutional symptoms. The occupation of the patient is an important factor.



Fig. 78.—Anthrax maligna in a morocco worker; patch showed central necrosis, vesicles upon the periphery, and brawny infiltration of surrounding tissues. Recovery.

**Prognosis.**—The disease is fatal in about 33 per cent. of cases.

**Treatment.**—Early free excision. Supportive treatment. An anthrax serum has been manufactured and is worthy of trial.

#### POSTMORTEM PUSTULE

*Synonym.*—Dissection wound.

**Definition.**—Postmortem pustule is a condition resulting from infection from the cadaver, and is characterized by an inflammatory lesion at the point of inoculation, and occasionally lymphangitis, lymphadenitis, and slight constitutional disturbance.

**Symptoms.**—Inoculation takes place at the site of a cut or abrasion. An itchy red spot is followed by the development of a vesicopustule with a broad, painful, inflammatory areola. Suppuration goes on beneath the crust, which reforms as soon as removed. The lymphatic vessels and glands may be affected, and there is often slight fever and malaise.

**Treatment.**—Curettage or cauterization of the pustule, followed by wet antiseptic dressings of boric acid or bichlorid of mercury.

Postmortem tubercle will be considered under the head of *Tuberculosis Verrucosa Cutis*.

### TINEA TRICHOPHYTINA

*Derivation.*—L., *tinea*, a moth-worm; *Θρίξ*, hair; *Φυτόν*, a vegetation.  
*Synonym.*—Ring-worm.

Ring-worm is a disease capable of attacking the general body surface, the scalp, the beard, and the nails. Investigations carried out by Sabouraud and others have discovered two parasitic fungi as the causative agents—the *Microsporon Audouini*, or small-spored fungus and the *trichophyton*, or large-spored fungus, of which there are several varieties. The geographic distribution of the microsporon variety shows wide differences. Ring-worm of the scalp due to the small-spored fungus is common in England, France, and the United States, and rare in Germany and Italy.

The varieties of ring-worm are: (1) *Tinea circinata*, or ring-worm of the smooth surface; (2) *tinea tonsurans*, or ring-worm of the scalp; (3) *tinea sycosis*, or ring-worm of the beard; (4) *tinea cruris*, or ring-worm of the genitocrural region (sometimes called *eczema marginatum*); (5) *tinea unguium*, *onychomycosis*, or ring-worm of the nails.

### TINEA CIRCINATA

*Synonyms.*—Ring-worm of the body; *Herpes circinatus*; *Tinea trichophytina corporis*.

**Definition.**—*Tinea circinata* is a contagious parasitic disease, due to a vegetable fungus, and characterized by annular vesiculosquamous patches upon the body surface.

**Symptoms.**—The disease begins as one or several rounded or irregular, pea-sized, hyperemic papules. A few days these assume a circular form, scarcely distinguishable from the surrounding skin.

Peripheral spreading and central healing progress hand in hand, so that the patches, when fully developed, are distinctly annular or ring-shaped. They are usually coin-sized, of a dull pinkish or reddish color, with slightly elevated borders which exhibit a branny desquamation. The confluence of neighboring patches may occur, leading to the production of gyrate lesions. Occasionally patches are seen with several concentric rings. In other cases patches may be observed without central clearing,



Fig. 70.—Ring-worm of hand (*tinea circinata*), showing concentric rings.

in which event they are circular, but not annular. Rarely there are observed elevated plaques with deep involvement of the skin; in these cases small pustules may be seen at the sites of the hair-follicles. Patches of ring-worm are usually few in number, often single. In rare instances a large number may be seen on the face, neck, arms, and body.

Itching is usually slight. The face, neck, and backs of hands are the most frequent seats.

In *tinea cruris* (*eczema marginatum*), the clinical appearances are so much modified as frequently to simulate an eczema inter-

trigo. The patches are large, diffuse, of a dull brownish-red color, with a well-defined marginated and at times slightly elevated border. Outlying circinate patches are often present. The eruption may spread with remarkable rapidity, successively involving the thighs, groins, genitals, mons veneris, and nates. Eczema is apt to complicate this affection. The itching is often severe, particularly at night.

Sabouraud states that *eczema marginatum* or *tinea cruris* is not due to the trichophyton fungus, but to another variety of



Fig. 80.—Multiple patches of ring-worm (*tinea circinata*), contracted from a kitten.

mold which he calls "*epidermophyton inguinale*." This investigator also claims that the same fungus is responsible for certain eczematoid eruptions involving the webs of the fingers and toes.

*Tinea imbricata* is a form of tropical body ring-worm in which large areas or the entire body are covered with brownish, concentric rings and large bulky scales. The body often looks clay covered. The scalp and face are usually **ex-**

*Tinea Trichophytina Unguium* (*Onychomycosis*; *Ring-worm of the Nails*).—Occasionally the nails are invaded by the ring-worm fungus. They become opaque, white, thickened, soft, and brittle. Two or three nails are usually affected. The disease runs a chronic course and is refractory to treatment.

**Etiology.**—*Tinea circinata* is more common in children than in adults. It is transmitted by contact and through articles of toilet. A much more common source than is generally suspected is the domestic pet. Cats and dogs not infrequently suffer from ring-worm, exhibiting partially bald and “moth-eaten” patches. Ring-worm contracted from animals is apt to be more active and extensive.



Fig. 81.—*Tinea cruris* (ring-worm; *eczema marginatum*).

**Pathology.**—The fungus is found in the epidermis, particularly in the corneous layer. Mycelium is abundant, spores scanty. The former consists of long, slender, sharply contoured, bifurcated, jointed threads. The spores are rounded, highly refractile bodies, varying from  $\frac{1}{1000}$  to  $\frac{1}{800}$  of an inch in diameter.

**Method of Examining the Fungus.**—Epidermic scales are scraped off with a knife and placed on a microscopic slide with a drop of caustic potash (10 to 40 per cent.). A cover-glass is then applied, with sufficient pressure to flatten out the scales. The fungus is best studied with an oil-immersion lens, although it can be seen with a  $\frac{1}{6}$ -inch dry lens.

**Prognosis.**—As a rule, the affection yields promptly to

treatment. Tinea cruris is more rebellious than the ordinary form.

**Treatment.**—The treatment consists in the use of parasiticide ointments and lotions. Mercury, sulphur, betanaphthol, resorcin, tar, and chrysarobin are all valuable. An efficient formula is:

R. Hydrarg. ammoniat. .... gr. x-xxx;  
Ung. zinci oxidi ..... ʒj.—M.

Hyposulphite of sodium (one dram to one ounce of water) and bichlorid of mercury ( $\frac{1}{2}$  grain to one ounce of water) are useful applications.

In the treatment of tinea cruris the remedies must not be too strong or an acute dermatitis will be set up. A soothing parasiticide preparation is to be preferred. The following has given me good results:

R. Hydrargyri bichloridi..... gr. j-ij;  
Resorcin. .... ʒj;  
Glycerini ..... fʒij;  
Zinci oxidi ..... ʒiss;  
Alcoholis..... fʒiv;  
Aquæ ..... q. s. ad fʒvj.—M.

#### TINEA TONSURANS

**Synonyms.**—Ring-worm of scalp; Herpes tonsurans; Tinea trichophytina capitis.

**Definition.**—Tinea tonsurans is a contagious, vegetable parasitic disease, characterized by circumscribed areas of partial baldness, with evidence of disease of the hair.

**Symptoms.**—The disease begins as small, rounded, reddened, scaly patches, occurring upon any portion of the hairy scalp. At the very onset there may be present minute vesicles, but these are apt to be overlooked. The condition is, in the beginning, a surface infection, and occasionally patches may be observed showing a slightly elevated annular border. Soon, however, pilary infection takes place; the follicles and hair-shafts are invaded, the latter becoming brittle and breaking off about a quarter of an inch above the level of the skin. The hair-stumps thus produced have a ‘gnawed-off’ appearance and are quite characteristic of the disease. Some of the affected hairs fall out. Typical lesions consist of partially bald, discrete, rounded, coin-sized, slightly reddened patches with

grayish scales. The patches vary in size from the dimensions of a five-cent piece to those of the palm of the hand. Extension takes place by involvement of fresh hairs upon the periphery of the patch. In some cases the scalp becomes diffusely affected and no distinct circumscribed patches are present. A thinning of the hair over a considerable area is observed. This is called *disseminated ring-worm*. Such cases at times present difficulties in diagnosis.

*Tinea kerion* is a highly inflammatory ring-worm, terminating in suppuration. The patches are reddish or yellowish, raised, edematous, and boggy; they are honey-combed with distended



Fig. 82.—Ring-worm of scalp (*tinea tonsurans*).

openings of hair-follicles, through which exudes a yellowish pus. Burning, itching, tenderness, and pain are present in a variable degree. The suppuration of a ring-worm hastens its cure, but may destroy the follicles and produce permanent baldness.

The appearances of *microsporon ring-worm* and *trichophyton ring-worm* vary somewhat. In the former, the patches are prone to be few in number, but may reach a considerable size. The follicles are prominent and the skin scaly. The hair-stumps are whitish and surrounded by a sheath filled with fungus.

*Trichophyton* patches are prone to be smaller, but more



Fig. 83.—Ring-worm on scalp and neck.



Fig. 84.—Ring-worm on border of hair, showing prominence of follicular mouths, numerous; the follicles are prominent. Scales are sparse or at considerable areas may



be attacked. The hair commonly breaks off at the level of the skin, exhibiting merely blackish points. Diffuse ring-worm and the so-called *bald ring-worm* are commonly caused by the trichophyton.

Itching of a mild character is usually present in ring-worm. The disease occurs almost exclusively in children. It is rare to observe cases over the age of fifteen, and in adults ring-worm of the scalp is a dermatologic curiosity.

The course of the affection is extremely slow. Untreated, it will last from one to several years. During convalescence,



Fig. 85.—Ring-worm of scalp (*tinea tonsurans*).

pointed hairs grow in and the patch is gradually covered. Where follicles have been destroyed by suppuration, permanent thinning will take place.

**Etiology.**—The disease is produced by a vegetable parasite—either the trichophyton fungus or the *Microsporon Audouini*. Ring-worm is essentially a disease of childhood. The affection is communicated from one child to another by direct contact, or through the medium of caps, brushes, combs, towels, etc. It may be contracted from the lower animals, such as the cat,

dog, rabbit, horse, or ox. Animal infections are apt to pursue a more severe course.

*Tinea circinata* in the adult may produce *tinea tonsurans* in the child, and vice versa.

**Pathology.**—The fungus is found in the hair, the hair-follicle, and the epidermis. In this form of the disease the spores are extremely abundant in the lower portion of the hair, producing, under the microscope, a fish-roë appearance. The mycelium is usually scanty or absent. The hair is prepared by immersion in liquor potassæ, and is examined without staining. Only broken-off hairs are to be selected for examination.

**Diagnosis.**—The characteristic features of *tinea tonsurans* are circumscribed patches of partial baldness, grayish scales, goose-flesh appearance, broken-off stumps of hair, and the presence of the fungus.

These points will enable one to distinguish the disease from eczema, psoriasis, and seborrhea. The most important is the differential diagnosis from alopecia areata, which is here appended:

| TINEA TONSURANS.                                 | ALOPECIA AREATA.                       |
|--|--|
| 1. Slow and insidious onset.                     | 1. Rapid onset.                        |
| 2. Patches are:                                  | 2. Patches are:                        |
| (a) Covered with "broken-off stumps."            | (a) Totally devoid of hair, as a rule. |
| (b) More or less reddened.                       | (b) Pale and whitish.                  |
| (c) Rough and scaly.                             | (c) Smooth and soft.                   |
| (d) Follicles prominent; goose-flesh appearance. | (d) Follicles contracted.              |
| 3. Fungus present.                               | 3. Absence of fungus.                  |
| 4. Occurs almost exclusively in children.        | 4. May occur at any age.               |

**Prognosis.**—As to ultimate cure, favorable. As to duration, guarded. Most cases persist from three months to one and one-half years.

**Treatment.**—As a matter of prophylaxis, domestic pet animals, such as dogs, cats, rabbits, birds, etc., should always be carefully examined before being brought into a home.

The cure of ring-worm of the scalp is slow, because the fungus invades the depths of the hair-follicles and is, therefore, most inaccessible to parasiticide remedies. The hairs become brittle as a result of infiltration with the parasite, and break off just above the surface of the skin. It is evident that treatment wh

removes the hairs causes considerable extrusion of the fungus and renders the follicles more patulous, thus permitting greater penetration of the remedies employed.

The treatment consists of—(1) Daily soap and hot-water cleansings of the scalp (medicated soaps containing tar, carbolic acid, or mercury are useful); (2) depilation of diseased hairs and of those surrounding the affected areas; and (3) the application of parasiticide ointments and lotions. No one medication is immeasurably superior to others; it is the persevering and thorough use of the preparation that produces a successful result. The ointments which are most favorably regarded are: Betanaphthol, one dram to one ounce; iodine, one dram to one ounce; tar, one to two drams to one ounce; chrysarobin, 20–40 grains to one ounce; sulphur, one to two drams to one ounce; carbolic acid, 25 grains to one ounce, etc.

The best results in my hands have been secured by brushing into the patches, several times a day, the following:

R. Olei cadini )  
Olei olivæ ) ..... āā f̄j.—M.

In the morning a carbolic soap is used with hot water. Good results are also obtained from an ointment containing:

R. Sulph. præcip. )  
Betanaphthol ) ..... āā 3j;  
Vaselin. .... 3j.—M.

Follicular suppuration, as in tinea kerion, often hastens the cure of ring-worm. Some clinicians endeavor to produce such a condition by having various irritants rubbed in, such as Croton oil, chrysarobin, pyrogallie acid, etc.

*x-Rays.*—The x-ray treatment of tinea tonsurans has been brought to such a state of perfection by Sabouraud, of Paris, that he is enabled to cure a patch, in the vast majority of cases, in one treatment.

The dosage is measured by the effect of the rays upon discs impregnated with platinocyanid of barium, which changes in color; this measuring of the dosage is insisted upon. The treatments are given at a distance of 15 centimeters, and the discs are placed at one-half this distance. The time of exposures varies according to conditions, but averages ten to fifteen minutes. A large static machine and small diameter tubes of

high vacuum are preferred. The hair falls completely in from eighteen to thirty-five days. After the *x*-ray exposure the head is painted daily with a 10 per cent. tincture of iodine, and after the eighteenth day daily soap-and-water washings are employed. The treated areas remain bald for two months, after which restoration of hair occurs. With proper technic Sabouraud claims constant successes, complete depilation without dermatitis, and with subsequent complete hair regrowth.

### TINEA SYCOSIS

*Derivation.*—*Σικον*, a fig. *Synonyms.*—Barber's itch; Parasitic sycosis; *Tinea trichophytina barbæ*; Ring-worm of the beard.

**Definition.**—*Tinea sycosis* is a contagious vegetable parasitic affection, due to the trichophyton fungus, and attacking the hairs and hair-follicles of the bearded region.

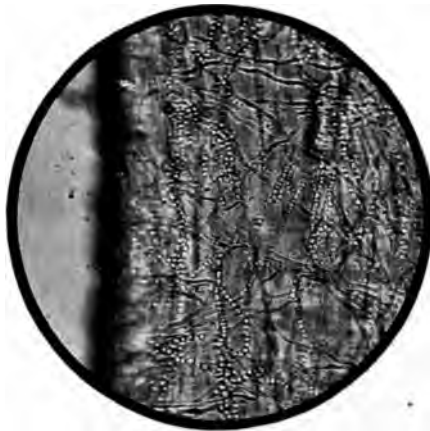


Fig. 86.—Trichophyton of the variety *ectothrix*; hairs from a case of ring-worm of the bearded region, involving also the upper lip—hairs from the latter region. Fungus on surface of a hair ( $\times$  about 400) (courtesy of Dr. M. B. Hartzell).

**Symptoms.**—The disease begins as small, rounded, scaly, reddish patches (*tinea circinata*) occupying the bearded region. The hairs and their follicles soon become invaded, with the production of swelling and induration and the appearance of nodular or lumpy tumefactions. Numerous pustules mark the sites of the hair-follicles. These soon rupture and give exit to a yellowish pus, which dries in the form of crusts. The

hairs are dry and brittle, and either break off or fall out. The chin, neck, and submaxillary region are the regions most frequently affected. The upper lip is more rarely attacked. Itching and burning are present in varying degrees. The disease, when untreated, persists for a long time. Unless treatment is extremely thorough, relapses are liable to occur.

**Etiology.**—The disease is due to the invasion of the hair-follicles by the trichophyton fungus. The affection is usually acquired in the barber-shop. The disease, however, is not infrequently contracted from horses and cattle. When acquired from the latter source, it is apt to be more severe.

**Pathology.**—Both the hair and the hair-follicles contain the fungus, which consists of threads of mycelium and spores.



Fig. 87.—Trichophyton of the variety ectothrix; hairs from a case of ring-worm of the bearded region involving also the upper lip—hairs from the latter region. Fungus in the hair ( $\times$  about 400) (courtesy of Dr. M. B. Hartzell).

Secondary inflammation of the follicles and surrounding tissues, with swelling, infiltration, and suppuration, is present in well-marked cases.

**Diagnosis.**—The chief affection to be differentiated is ordinary sycosis. Contagious impetigo of the bearded region is sometimes erroneously termed barber's itch. It is frequently contracted in the barber-shop, but is easily distinguished. The primary lesions are superficial vesicles which rapidly form crusts. Impetigo is much more readily cured.

## TINEA SYCOSIS.

## SYCOSIS VULGARIS.

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. A typical case shows large lumpy or nodular tumefactions.</li> <li>2. Hairs broken and easily extracted. Root usually dry.</li> <li>3. Course rapid. Marked changes from week to week.</li> <li>4. Upper lip rarely involved.</li> <li>5. Trichophyton fungus in hairs.</li> </ol> | <ol style="list-style-type: none"> <li>1. A typical case shows small, discrete pustules pierced by hairs.</li> <li>2. Hairs firmly attached until free suppuration occurs. Roots often swollen with pus.</li> <li>3. Course slow. Little change from week to week.</li> <li>4. Upper lip frequently involved.</li> <li>5. Absence of fungus in hairs.</li> </ol> |
|--|--|

**Prognosis.**—The disease is at times rebellious to treatment, although most cases get well in one to two months. Relapses are common.

**Treatment.**—The treatment consists of epilation and the use of parasiticide applications. Crusts should be softened with bland oils and then removed with soap and warm water. Epilation of the diseased hairs should be practised assiduously until all are removed. The healthy areas of the beard should be shaved.

The following are among the most approved local applications:

- |                                  |           |
|----------------------------------|-----------|
| R. Sulph. præcip.....            | 3j;       |
| Petrolat.....                    | 3j.—M.    |
| R. Hydrarg. sulphat. flav. ....  | gr. x-xx; |
| Petrolat.....                    | 3j.—M.    |
| R. Sodii hyposulph.....          | 3j;       |
| Aqua.....                        | f3j.—M.   |
| R. Hydrarg. ammoniat. ....       | gr. xl;   |
| Ung. zinci oxidi .....           | 3j.—M.    |
| R. Hydrarg. chlor. corrosiv..... | gr. j;    |
| Aqua.....                        | f3j.—M.   |

These should be applied two or three times a day.

In obstinate and refractory cases the x-rays may be employed to cause falling of the hairs. Care should be used in such exposures, as too vigorous treatment may cause permanent loss of hair.

## TINEA FAVOSA

*Derivation.*—L., *favus*, a honey-comb. *Synonym.*—Favus.

**Definition.**—Tinea favosa is a contagious, vegetable parasitic disease, due to the *Achorion Schönleini*, characterized by cup-shaped, sulphur-yellow crusts perfor

**Symptoms.**—The usual seat of the disease is the scalp. The disease begins as a diffuse or circumscribed superficial inflammation, with scaling, soon followed by the appearance of pin-head-sized yellowish crusts seated about the hair-follicles. The crusts increase to the size of peas, when they acquire the characteristics of the "favus-cup," or scutulum. The typical favus-cup is split-pea-sized, rounded, umbilicated, penetrated by a hair, and of a sulphur-yellow color. It is usually friable, crumbling between the fingers like dry mortar. When dislodged from its bed there is exposed to view a reddened, shining, atrophic, cup-shaped, often suppurating excavation, which



Fig. 88.—Favus of scalp (Fox's "Atlas").

heals up with the production of a scar. As a consequence, more or less permanent baldness results. Old cured cases present irregular bald scars, with here and there crinkled hairs or tufts of hair growing.

The crusts may be discrete or confluent, forming thick, irregularly shaped masses of a honey-combed appearance. In well-marked cases a peculiar mouse-like or damp-straw odor is present, which is quite characteristic of the disease.

The hairs are dry, lusterless, and brittle, and are apt to split longitudinally, break off, or fall out. Itching, variable in degree, occurs in most cases.

Favus occasionally attacks the non-hairy portion of the body

(tinea favosa epidermidis). It may also affect the nails (tinea favosa unguium, onychomycosis favosa), causing them to become thickened, yellowish, opaque, and brittle.

The course of the disease is extremely chronic, lasting years, and in some cases a lifetime. The affection is feebly contagious as compared with ring-worm.

**Etiology.**—The cause of the disease is a vegetable organism known as the *Achorion Schönleinii*. The disease usually begins in childhood. It exists chiefly among the foreign poor. In this country it is more commonly seen among Russians, Poles, and Italians. It is not infrequently contracted from cats and other lower animals.

**Pathology.**—The fungus occurs in the hair, hair-follicles, and epidermis. The favus crust is made up almost entirely of fungus. The favus mycelium consists of slender threads, which appear as flattened tubes, either clear or containing spores. The threads are broader and the joints more numerous than in ring-worm. The spores are rounded, highly refractile bodies, varying in size from  $\frac{1}{800}$  to  $\frac{1}{400}$  of an inch in diameter. They differ from the spores of ring-worm in their greater variability both as to size and shape. Both spores and mycelium are abundant. Secondary inflammatory changes occur in the corium.

**Diagnosis.**—Favus is principally to be distinguished from tinea tonsurans, seborrheic eczema, and pustular eczema. In long-standing cases in which we observe sulphur-yellow, cup-



Fig. 89.—Extensive tinea favosa of body surface. Scalp free. Rare.



shaped, friable crusts and scarring the diagnosis is easy. Where these features are poorly marked, the diagnosis may present difficulties. Ring-worm is usually of shorter duration, exhibits rounded patches, "gnawed-off" hair-stumps, and less intense redness. Seborrheic eczema may cause thinning of the hair but not circumscribed hair loss; no fungus is present. Pustular eczema and purulent crusts due to pediculi may be confounded with favus, but the crusts are ocher-colored or brownish, and when removed show no deep involvement of the scalp. The microscope is here of value.

*To examine for fungus* a fragment of crust or a hair is moistened in 10 to 40 per cent. liquor potassæ and examined under a microscope without preliminary staining. Considerable skill is necessary to distinguish the ring-worm from the favus fungus by exclusively morphologic characteristics.

**Prognosis.**—Favus of the scalp is extremely rebellious, lasting for years. In long-standing cases extensive scarring and permanent hair loss are apt to occur. Favus of the body responds readily to treatment.

**Treatment.**—The treatment of favus of the scalp consists of depilation of the diseased hairs and of the use of parasiticide ointments and lotions. The hairs may be removed with a depilation forceps or may be pulled out with adhesive sticks, as suggested by Bulkley. The formula for the adhesive mass is:

|                        |          |
|------------------------|----------|
| R. Cera flavæ .....    | ʒiij;    |
| Lacæ in tubulis .....  | ʒiv;     |
| Resinæ .....           | ʒvj;     |
| Picis Burgundicæ ..... | ʒxi;     |
| Gummi damar .....      | ʒiss.—M. |

The mass is heated and then placed upon the affected region. When cool, it is twisted off with the adherent hairs.

The hair should be closely cropped and the crusts removed by softening with oils and subsequent soap-and-water cleansing. The parasiticide applications should be made twice daily.

Among the more commonly employed remedies may be mentioned the following:

|                                  |           |
|----------------------------------|-----------|
| R. Hydrarg. chlor. corrosiv..... | gr. j-ij; |
| Aqua .....                       | fʒj.—M.   |
| R. Sulph. præcip.....            | ʒj-ij;    |
| Betanaphthol .....               | ʒi;       |
| Petrolat.....                    | ʒj.—M.    |

- R. Hydrarg. oleat. .... 10-20 per cent.
- R. Sodii hyposulph. .... 3j;  
Aqua. .... f3j.—M.
- R. Chrysarobin. .... gr. xx-xl;  
Petrolat. .... 3j.—M.  
(To be used with caution.)
- R. Olei cadini }  
Olei olivæ } ..... āā f3j.—M.

The treatment is long and tedious and is apt to tax the perseverance of the patient. The microscope should be repeatedly used before a case is pronounced cured. Treatment should be continued after apparent cure to guard against relapse.

Favus of the body is seldom rebellious, and may be treated with milder remedies than scalp favus. The crusts should be softened and removed and a mercurial or sulphur ointment rubbed in.

Favus of the nails is, as a rule, obstinate to treatment. The nail should be frequently pared and scraped, and strong tar or mercurial ointments rubbed in twice daily.

*x-Rays*.—Sabouraud has used the Röntgen rays as successfully in favus as in tinea tonsurans. The greater obstinacy of favus will doubtless establish the *x-rays* as the treatment of choice when the technic is sufficiently simplified to warrant the general use of this measure. (For technic see Tinea Tonsurans.)

#### TINEA VERSICOLOR

*Synonyms*.—Pityriasis versicolor; Chromophytosis.

**Definition**.—Tinea versicolor is a vegetable parasitic disease, due to the *Microsporon furfur*, characterized by furfuraceous, yellowish, macular patches, occurring chiefly upon the trunk.

**Symptoms**.—The disease begins as pin-head- to pea-sized yellowish macules, scattered over the affected region. These, in the course of a few weeks or months, increase in size and coalesce, with the production of large patches. The patches are irregular in shape, with sharply defined edges. They are, as a rule, barely elevated above the surface of the skin. Occasionally the border is raised, in which event *smm* assume an annular form. The color is *usu* fawn-hued, although it may vary from a *pal* Occasionally it has a distinct *pinkish*.

patches have a grayish appearance. The affected area is covered with a fine, furfuraceous, mealy scaling. When this is not apparent, it may be rendered evident by scratching the surface with the finger-nail.

The eruption is usually confined to the trunk, particularly the chest and interscapular region. The neck, axilla, arm, and, in rare cases, the face, may also become involved. Itching of a mild character may be present, especially in summer.



Fig. 90.—Tinea versicolor.

Tinea versicolor pursues a chronic course, lasting, untreated, for months and years. It commonly disappears or grows less visible in the cold months, reappearing when the warm season arrives. I have also observed the reverse of this. The disease, with rare exceptions, is confined to adults. It is but slightly contagious. I have known married men and women to have tinea versicolor for years and not communicate it to their spouses; this is all the more remarkable when one considers the abundance of fungus on the skin.

**Etiology.**—The disease is due to the presence and growth of a vegetable fungus which was first described by Eichstedt in

1846. Robin applied to this the name of *Microsporon furfur*. The disease is rare in childhood. A special and as yet unknown condition of the skin is necessary to make it a favorable soil. Some writers believe free perspiration to be a predisposing factor.

**Pathology.**—The corneous layer is permeated with a luxuriant growth of mycelium and spores. The mycelia consist of short, jointed, and angular threads, which may be clear or contain spores. The spores are rounded, highly refractile bodies, varying in size from one-nine-hundredth to one-three-hundredth of an inch in diameter. In tinea versicolor there is a characteristic tendency of the spores to become aggregated in masses.



Fig. 91.—Photomicrograph of mycelia and spores of tinea versicolor in the horny layer of the epidermis. Stained section of skin.

To examine for the fungus, wash the scrapings in ether to remove the fat, and soften in a 10 to 20 per cent. caustic potash solution. The spores may be made more refractile by examining them in a solution of equal parts of glycerin and alcohol. The fungus may be grown in culture, but with some difficulty and with frequent failures.

**Diagnosis.**—Fawn-colored patches upon the chest and back, that can be partly scraped away and in which abundant fungi can be found under the microscope, should give rise to no difficulty in diagnosis. *Chloasma* is more common on the face and is not scaly. The same is true of *vittiligo*; moreover, there is actually loss of pigment, surrounded by excessive coloration. The *macular syphiloderm* is characterized by more re

greater symmetry, and more uniformity in the size of the patches.

**Prognosis.**—The eruption responds promptly to treatment, but relapses are common, owing to failure to destroy all the fungi in the skin.

**Treatment.**—The treatment is rapidly efficient, a few weeks sufficing in most cases to establish a disappearance of the eruption. The treatment consists of hot baths, friction with soap (or, better still, *sapo mollis*), followed by the application of a parasiticide.

Lotions or ointments may be employed. Sulphur, mercury, tar, resorcin, etc., are among the most efficacious remedies. The following is useful:

|                         |         |
|-------------------------|---------|
| R. Sulph. præcip.....   | 3j;     |
| Acidi salicylici.....   | gr. xx; |
| Adipis benzoat.....     | 3j.—M.  |
| Sig.—Rub in after bath. |         |

Solutions of sodium hyposulphite (one dram to one fluid-ounce) and bichlorid of mercury (one grain to one fluidounce) are easy of application and eminently useful. When the eruption is extensive, baths containing 2 to 4 ounces of liquor calcis sulphurata (Vleminckx's solution) to 30 gallons of water have the advantage of acting on the entire diseased area.

It is important to continue the treatment for some time after apparent cure, in order to preclude the possibility of relapse.

### ERYTHRASMA

**Definition.**—Erythrasma is a rare vegetable parasitic disease, due to the *Microsporon minutissimum*, characterized by reddish or brownish patches occurring in the axillary, inguinal, and genitocrural regions.

**Symptoms.**—The disease occurs as small, rounded or irregular, well-defined, slightly furfuraceous patches of a reddish or brownish color. The axillary, inguinal, genitocrural, and nasal folds are the usual regions involved. The disease is slowly progressive and may last for years. It is accompanied by slight itching. The affection is often undiscovered, as it gives no inconvenience to the patient.

**Etiology and Pathology.**—The disease is due to the *Microsporon minutissimum*, which consists of interlacing, jointed, bifurcating, mycelial threads and, according to some, minute spores. The mycelium and spores are about one-third the size of the ring-worm fungus.

**Diagnosis.**—The disease may be distinguished from tinea versicolor by the absence of the eruption on the trunk, the redder color of the lesions, and the differences in the macroscopic appearances.

**Treatment.**—The disease is amenable to the same character of local treatment as is employed in tinea versicolor. The affection tends to relapse unless the fungus is entirely destroyed.

### PINTA

*Synonyms.*—Caraaté; Spotted sickness, etc.

The disease is indigenous to Mexico and Central and South America; it occurs particularly among the blacks, but also in the whites.

It is characterized by the appearance of scaly spots, which vary greatly in coloration according to the particular variety of fungus producing the disease and the race of the subject. The exposed parts, such as the neck, face, and hands, are first attacked, although no part of the cutaneous surface is exempt. The size, shape, and number of the patches are most variable. The color may be grayish, black, blue, red, or dull white. The red variety attacks whites and is deeper and more destructive; in negroes the patches are bluish-black; whitish discolorations occur during the stage of involution. A fine furfuraceous scaling covers the affected areas.

The disease runs a chronic course, extending over a period of months or years. The general health is not affected. The disease is alleged to be due to several varieties of aspergillus fungus.

**Treatment.**—Parasiticide applications, such as are used in the vegetable parasitic diseases. Montoya especially extols the mercurials.

### CRAW-CRAW

Craw-craw is a disease found chiefly upon the west coast of Africa. The eruption attacks by predilection the fingers and forearms, and resembles, to a certain extent, scabies. Although no burrows are seen, papules, vesicles, and pustules, accompanied by itching, are present. The scratching causes excoriations and crusting. Both nematodes and filaria have been discovered in the lesions. The parasites are found in the exuding fluid and scrapings. The disease is rebellious to treatment.

**SCABIES**

*Derivation.*—L., *scabere*, to itch. *Synonym.*—Itch.

**Definition.**—Scabies is a contagious, animal parasitic disease, due to the *Sarcoptes scabiei*, characterized by burrows and a multiform eruption, and attended by severe itching.

**Symptoms.**—The itch-mite, in burrowing into the skin, produces at the point of entrance a small papule, vesicle, or pustule. Later, a burrow or cuniculus is formed at this site. The burrow



Fig. 92.—Scabies.

is a straight, tortuous or zigzag, grayish or blackish, linear epidermal elevation, varying in length from  $\frac{1}{8}$  to  $\frac{1}{2}$  of an inch.

The blackish color of the trail is due largely to dust and dirt rubbed into the epidermal roughening. The burrow is peculiar to scabies, and when found, constitutes positive evidence of the disease. It is most characteristically seen upon the lateral surface of the fingers and upon the wrist.

In well-marked cases of the "itch" there are seen, in addition to the burrows, a multiform eruption consisting of papules, vesicles, pustules, crusts, and excoriations due to scratching.

The excoriations exhibit themselves as abraded summits of pin-head-sized papules. A striking feature of the eruption of scabies is the distribution; this is highly diagnostic, and commonly enables one to determine the nature of the disease with a glance of the eye. The affected areas comprise the interdigital spaces, the flexor surface of the wrist and arm, the anterior and posterior axillary folds, the mammæ and nipples (in women), the umbilicus, the buttocks, the penis, the inner side of the thighs and legs, and the toes (particularly in infants). The face is exempt, except occasionally in infants.

Itching is a constant and prominent symptom of the disease, and justifies the common name applied to the affection. A

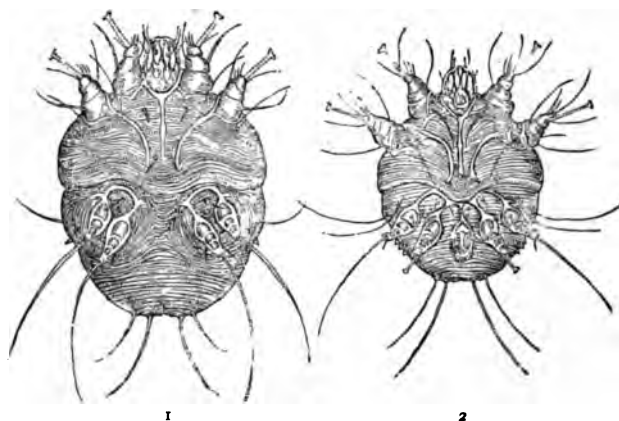


Fig. 93.—*Acarus scabiei* (ventral surface): 1, Female; 2, male ( $\times 100$ ) (courtesy of Dr. L. A. Duhring).

peculiarity of the itching is the discrepancy between its intensity during the day and at night. It is in more or less abeyance during the former, but after retiring, the patient suffers such distress as frequently to render sleep impossible. The intensity of the pruritus is commonly out of all proportion to the scanty eruption present. The itching incites the patient to violent scratching, and thus abrasions, eczematoid dermatitis, and secondary pus-infection are produced. In children and persons with sensitive skin the eruption may reach a high grade of inflammation with an al eczema superadded.

apid; in the course of one or  
ptoms a well-pronounced



eruption may be present. In untreated patients the disease lasts for many months, exhibiting but little tendency to spontaneous cure. In patients who bathe frequently and use soap the parasitic extension is apt to be slower and the distinctive features of the disease less pronounced.

**Etiology.**—Scabies is due to invasion of the skin by the *Acarus* or *Sarcoptes scabiei*. The affection is very common in the lower social strata and is, therefore, largely met with in dispensary practice. Now and then, however, we observe the disease in those whose bodily hygiene is beyond reproach. Scabies is essentially a household disease, particularly where there is overcrowding. Close bodily contact and the occupancy of a bed with or after a scabetic subject are the usual methods of transmission. The wearing of infected apparel may likewise cause the disease. Brief contact, as exemplified in hand-shaking, is not likely to lead to infection.

**Pathology.**—The burrow consists of a narrow tract through the epidermis made by the penetration of the impregnated female acarus, which alone is capable of producing the disease. The mite deposits a half-dozen or more eggs and specks of excrement along the course of the cuniculus, and, after reaching the mucous layer, perishes. The ova hatch out in eight or ten days, and, effecting their egress from the burrows, start cuniculi of their own.

The itch-mite is a yellowish-white, ovoid body, just about visible to the eye. The female is twice the size of the male.

Eosinophilia in various grades may be found in a large percentage of cases of scabies.

**Diagnosis.**—Scabies consists of the burrows plus an artificial inflammation of the skin produced by the parasite and the scratching.

The characteristic features of the disease are the presence of burrows, a multifiform eruption distributed in a peculiar manner over the surface of the body, the intense itching, worse at night, and the history.

Scabies may be distinguished from *vesicular* or *pustular eczema* by the presence of the mite and the burrows, the peculiar scattered distribution of the lesions, the progression of the eruption from day to day, and the history of contagion.

*Pediculosis corporis* is characterized by scratch excoriations across the shoulders, chest, and around the waist; the hands are free. The itching is often greater during the day.

**Prognosis.**—Favorable. The disease, no matter of what duration, is speedily curable.

**Treatment.**—The objects of treatment are twofold—to kill the parasite and to subdue the accompanying dermatitis. The itch-mite is easily destroyed by such remedies as sulphur, betanaphthol, balsam of Peru, styrax, tar, staphisagria, etc., but it must be remembered that such remedies irritate the skin if used too strong or for too long a period.

Sulphur is one of the most reliable remedies, and is best applied in ointment form. It may be used in conjunction with balsam of Peru, as in the following formula:

R. Sulph. præcip..... ʒi;  
 Balsam Peruv..... ʒi;  
 Adipis..... ʒj.—M.

Betanaphthol possesses the advantage of being free from odor and more cleanly, and is, therefore, a more eligible preparation in private practice. It may be used alone (one dram to one ounce) or combined with sulphur.

Styrax is less irritating than sulphur, and is especially useful in the itch of children:

R. Styracis liq..... fʒj;  
 Adipis..... ʒij.—M.

Sherwell prefers to use sulphur in the form of powder, and states that it is less irritating than an ointment, as well as more cleanly. The powder is rubbed over the body at night, and a small quantity is strewn between the bed-sheets.

The treatment of scabies is to be inaugurated by a protracted hot bath with the vigorous use of soap. The body from neck to foot is then to be thoroughly anointed with the ointment. This may be rubbed in twice a day for three days or nightly for one week. At the end of this time another bath should be taken and the underclothing and bed-linen changed and sterilized. Ordinarily, such treatment will suffice to produce a cure; occasionally, it must be repeated, particularly if fresh lesions appear.

Care should be exercised *not to overtreat* cases. The persistence of itching is not always an index of the continuance of the scabies, but is more likely to result from the dermatitis, which is, perhaps, being aggravated by the parasitication. In such cases sedative ointments or lotions are used in eczema, should be substituted.

## GRAIN ITCH

*Synonyms.*—Straw itch; Straw-mattress disease; Acarodermatitis urticarioides.

**Definition.**—Grain itch is an eruptive disorder characterized by a wide-spread urticarioid eruption, accompanied by intense itching, and due to the noxious activity of a small mite, the *pediculoides ventricosus*. The disease has been observed in the eastern section of the United States, only between the months of May and October. The disease was clinically described in this country by the author in 1901 and in 1909. Dr. Joseph Goldberger, of the U. S. Public Health Service, and the author found the *pediculoides ventricosus* in the incriminated straw.

**Symptoms.**—At the beginning of the affection the patient may, particularly in severe attacks, experience chilliness, a slight rise in temperature, malaise, anorexia, and even vomiting. The systemic symptoms are, however, inconstant.

The eruptive outbreak consists of wheals, many of which exhibit at their summits a central pin-point-sized vesicle. This is the peculiar and characteristic lesion of the disease. The contents of the vesicle are primarily clear, but rapidly become lactescent or distinctly puriform. Instead of frank wheals, the efflorescence may consist of barely elevated, erythematous-urticarial spots or papulo-urticarial lesions. The latter are edematous in character, but have the size and shape of papules. They vary in size from a lentil to a finger-nail, and are rounded, oval, or irregular in contour. They are elevated about 1 to 2 mm. above the level of the skin.

The color is usually of a warm rose tint. The central vesicle or pustule is usually minute, not exceeding in diameter 0.5 mm. In many cases it is pin-head-sized (about 2 mm.); exceptionally the vesicle or pustule may reach a diameter of 3 mm. In such cases the large vesicle situated upon an erythematous urticarial base presents a strong resemblance to the lesions of chicken-pox.

In many patients the summits of the lesions are so excoriated by scratching that no vesicles are seen—instead, the wheals are surmounted by punctiform, dark-red blood-crusts.

The eruption varies in extent in different subjects: usually it is profuse, involving the neck, chest, abdomen, and back,

and in a lesser degree the arms and the legs. The face occasionally shows a few lesions, but the hands and feet are free.

In rare instances the eruption may undergo secondary modification and take on the character of a macular erythema multiforme or a scarlatinoid erythema.

The eruption is usually accompanied by the most violent



Fig. 94.—Grain itch: large varicelloid vesicles interspersed with wheals.

and intolerable itching. This is worse at night, and seriously interferes with sleep. When the disease is untreated and the cause unsuspected, the eruption may continue for a number of weeks (three to seven), giving rise to the keenest distress.

A mild albuminuria is produced in some cases, and there

is rather uniformly a slight leukocytosis with a moderate eosinophilia.

**Etiology.**—The disease is due to contact with wheat, barley, and other cereals and the straw therefrom, infested with a minute mite, the *pediculoides ventricosus*. Farmers may be



Fig. 95.—Grain itch: wheals surmounted by vesicles and blood-crusts.

attacked from contact with grain in the field, storehouse, or granary, porters from carrying sacks of grain, and those who use straw for packing purposes. The most severe attacks, however, have occurred in those who have slept upon infected straw mattresses.

The mite is predatory and parasitic upon grain-destroying insects, particularly the wheat-straw worm, the joint worm, and the grain moth.

**Pathology.**—The lesions are doubtless produced by the bite



Fig. 96.—Grain itch. Profuse eruption: due to sleeping on infected straw mattress.

of the pediculoides and the injection of an irritating material. In a typical lesion studied under the microscope I found epidermal vesiculation, dense leukocytes in the corium, large numbers of mast cells,

mentation. The histopathologic changes are essentially those of urticaria.

The *pediculoides ventricosus* is a straw-colored mite scarcely visible to the naked eye. It has four pairs of legs and mouth parts formed for biting and sucking. It belongs to the class of Arachnida and order of Acarina, or mites.

**Diagnosis.**—The affection is apt to be confounded with scabies, urticaria, chicken-pox, or pediculosis corporis. It may be distinguished from ordinary "hives" by the longer duration of the individual lesions, by the central vesiculation,



Fig. 97.—Microscopic mite belonging to the genus *Pediculoides* found in the straw of mattresses. Female mite; magnified about 300 diameters.

the constitutional disturbance, the greater persistence of the attack, and the incidence among several members of a household.

Chicken-pox, which is at times closely simulated by the eruption, may be excluded by the duration of the lesions, the smallness of the vesicles, the violence and persistence of the itching, and the great incidence of the disease among adults.

Scabies may be strongly suggested when the lesions are excoriated by scratching; it may be eliminated from consideration by the freedom of involvement of the hands, by the absence of burrows, and by the uniform eruption of erythemato-urticarial lesions surmounted by vesicles.

Pediculosis corporis may be excluded by attention to the character of the lesions and by failure to find pediculi.

The history of contact with grain or straw is, of course, of great diagnostic value.

**Prognosis and Treatment.**—When the nature of the disease is recognized, cure is easily effected. The pediculoides does not burrow into the skin, but merely perambulates upon the surface, and punctures the skin to obtain nutrition. Frequent warm baths, with the use of soap, would doubtless effect a cure if contact with the infected straw or grain were not repeated. When the use of an infected mattress is continued, the affection may last for a number of weeks.

I have found the following ointment useful:

|                      |          |
|----------------------|----------|
| R. Betanaphthol..... | gr. xxx; |
| Sulph. præcip.....   | gr. xl;  |
| Adipis benzoat.....  | 3j.      |

In order to prevent reinfection of the patient, his clothing should be disinfected by boiling or careful sulphur or formaldehyd fumigation.

Where the source of the parasite is a straw mattress, the latter and the bed-clothing should be exposed in a closed chamber to steam, sulphur dioxid, or formaldehyd.

## PEDICULOSIS

*Derivation.*—L., *pediculus*, a little foot. *Synonyms.*—Lousiness; Phthiriasis.

**Definition.**—Pediculosis is a contagious animal parasitic disease, characterized by the presence of pediculi, hemorrhagic points, and scratch-marks.

**Symptoms.**—There are three varieties: (1) Pediculosis capitis. (2) Pediculosis corporis. (3) Pediculosis pubis. Although these parasites belong to the same family, they are anatomically different, and each variety has its special habitat in relation to the host.

## PEDICULOSIS CAPITIS

Pediculosis capitis or capillitii is due to the invasion of the scalp by the pediculus capitis, or head-louse.

It is characterized by severe itching, which excites scratching and leads to the formation of excoriations with serous, purulent,





devitalize the ova, and subdue the accompanying inflammation. Among the most popular and efficacious remedies is raw petro-

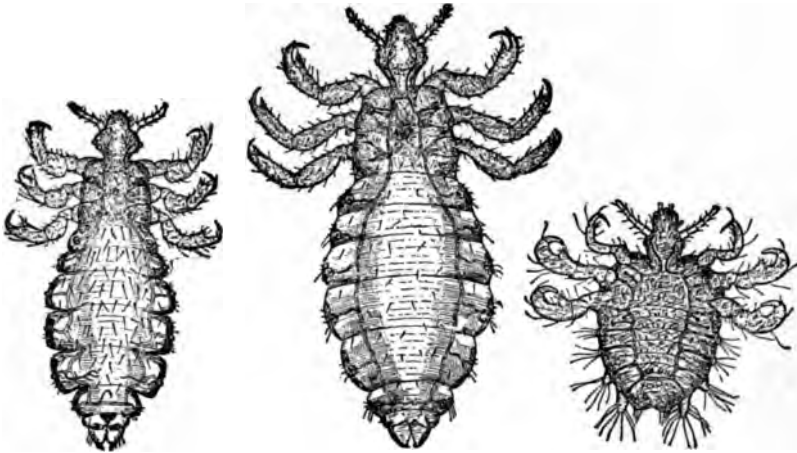


Fig. 99.  
Pediculus capitis.

Fig. 100.  
Pediculus corporis.

Fig. 101.  
Pediculus pubis.

Female; dorsal surface ( $\times 25$ ) (courtesy of Dr. L. A. Duhring).

leum, either pure or with equal parts of olive oil. The following formula makes an efficacious and not unpleasant application:

R. Olei petrolei..... $\frac{3}{4}$ vj;  
Olei olivæ..... $\frac{3}{4}$ ij;  
Balsam. Peruv..... $\frac{3}{4}$ j.—M.

It should be thoroughly applied to the scalp for one or two nights, followed in the morning by a shampoo of the scalp with soap and water or tincture of green soap. Other remedies, such as tincture of cocculus indicus, fluidextract of staphisagria (two fluidrams to six fluidounces of dilute acetic acid), or solutions of corrosive sublimate (one or two grains to one fluidounce), may be employed.

Where there is much pustulation and crusting, the following ointment may be applied:

R. Hydrarg. ammoniat..... gr. xx;  
Petrolati..... $\frac{3}{4}$ j.—M.

For the removal of  
carbonate  
etc  
aj

line solutions, such as car-  
broxid solution, borax,  
ould be frequently

There is rarely need of sacrificing the hair in women, although this may be done in children. Much time and labor are often necessary to cure pediculosis of the scalp. A fine-tooth comb should be assiduously used to detach the ova.

#### PEDICULOSIS CORPORIS

This is produced by the *pediculus corporis* or *vestimenti*, a parasite larger than the scalp louse. It resides in the seams of the underclothing, where the ova are deposited. They hatch out in about six days. The louse is merely present upon the skin when foraging.



Fig. 102.—Pediculosis corporis; characteristic location of the scratch-marks.

The perambulation of the parasites and its blood sucking give rise to intense itching, which causes the patient to scratch violently. The excoriations are usually linear. It is the distribution of these scratch-marks which constitutes, apart from the finding of the parasite, the strongest evidence of the disease.

The areas of predilection are the back in the scapular region, the chest, the waist-line, and, occasionally, the shoulders and hips. The diagnosis may commonly be made at a distance by

observing linear scratch-marks in these regions. Small hemorrhagic points are occasionally seen on the skin; these mark the sites where pediculi have extracted blood.

The parasites are, in mild cases, not found upon the skin, but upon the shirt worn next to the body. If this has been recently changed, there may be difficulty in discovering the parasitic offender. To avoid exciting the suspicion or antagonism of the patient it is well to view the patient from the rear and to examine the raised undershirt while appearing to scrutinize the skin. In long-standing and severe cases considerable brownish pigmentation of the skin may be induced.

The disease is common among the poorer classes in adults of middle and advanced years. It is occasionally encountered among persons in the higher walks of life, but usually in the old. It is distinctly uncommon in children and young adults. I do not recall ever having seen body lousiness in negroes.

**Diagnosis.**—The characteristic features are the presence of excoriations, nail-marks, blood-crusts, and hemorrhagic puncta upon the scapular region and around the waist. Careful search of the undergarments will usually reveal the existence of the pediculi.

Eczema, urticaria, scabies, and especially pruritus are the chief diseases to be differentiated.

**Treatment.**—The most important part of the treatment is the disinfection of the clothes and the bed-linen. These should be thoroughly boiled, baked, or fumigated with sulphur dioxide.

A lotion of carbolic acid or thymol will relieve the itching quite effectually. Where disinfection of clothing cannot be carried out, it is best to prescribe an ointment of sulphur (one dram to one ounce) or staphisagria (two drams to one ounce).

#### PEDICULOSIS PUBIS

The pediculus pubis, or crab-louse, is responsible for this form. It is the smallest of the pediculi, and is found clinging tenaciously to the hair, with the head buried in the follicular orifice. The "nits" are seen attached to the hair-shaft.

Itching about the genitalia, variable in degree, is the most prominent feature. Hemorrhagic puncta, papules, and excoriations may also be present. The pubis and perineum are the usual regions involved. Occasionally the axillæ and sternal region are attacked, and in rare cases the beard, eyebrows, and eyelashes.

The disease is almost exclusively observed in adults, and is usually contracted during sexual intercourse.

**Diagnosis.**—The diagnostic features are itching about the genitalia and the presence of pediculi and ova.

**Treatment.**—The parts should be washed with soap and water twice daily. Lotions, being more cleanly than ointments,



Fig. 103.—Photomicrograph of a pediculus pubis.

are to be preferred. The tincture of *coccus indicus*, the fluid-extract of *staphisagria*, and especially the petroleum-olive-oil-balsam-of-Peru lotion are excellent applications.

R. Fluidext. *staphisagriæ*..... f3iv:  
Acidi acetic dil..... f3vj.—M.

White precipitate (20–40 grains to one ounce) and mercurial ointment are both effective, although the latter may irritate the skin. Vinegar and soda and borax solutions are of value in effecting the removal of the “nits.”

#### CYSTICERCUS CELLULOSAE CUTIS

**Symptoms.**—Cysticerci containing the larvæ of tape-worms are occasionally observed in the skin as rounded, firm, elastic, pea- to walnut-sized tumors. They occur upon the trunk and extremities, where they may remain unchanged for years.

They are to be distinguished from gummata, sarcomata, etc. The contents under the microscope are seen to contain the parasites.

### DRACUNCULOSIS

*Synonyms.*—*Filaria medinensis*; Guinea-worm.

**Symptoms.**—The lesions, which consist of pea-sized or larger vesicopapules, are due to the presence of the *Dracunculus medinensis*. The worms may at times be felt beneath the skin as a coil of soft string. They are swallowed in their larval form in drinking-water and, migrating through the tissues, endeavor to effect an exit through the skin. The foot is the region usually affected.

The mature female is a cylindric nematode, twenty-five to thirty inches in length and one-tenth of an inch wide. The disease is encountered only in tropical countries.

**Treatment.**—The best treatment is the injection of a solution of 1 : 1000 bichlorid of mercury, followed in a few days by incision and extraction of the dead worms.

### IXODES

*Synonym.*—Woodtick.

**Symptoms.**—These parasites reside but temporarily upon the skin. The proboscis of the tick is inserted into the skin for the purpose of sucking the blood. The animal may thus remain for several days, until the body swells to the size of a pea or bean.

**Treatment.**—Forcible attempts at removal of the invader should be avoided, as the mandibles might thus be detached in the skin, giving rise to pain and subsequent inflammation. A drop of turpentine or benzin placed upon the head kills the parasite, thus causing it to relinquish its hold.

### LEPTUS

*Synonyms.*—Harvest-bug; *Leptus autumnalis*; Mower's mite.

**Symptoms.**—The leptus is a minute, brick-red or yellowish-red insect, found in summer and autumn upon bushes and grass. It attacks man by burying its head in the follicular orifices, particularly of the lower limbs.

**Treatment.**—This consists in the application of carbolized oil, balsam of Peru, sulphur ointment, etc.

**OESTRUS**

*Synonyms.*—Gad-fly; Bot-fly.

**Symptoms.**—The larvæ or ova of the gad-fly are deposited in the skin by the adult insect. A painful furuncular swelling occurs, which goes on to suppuration. The larvæ may be expressed with the pus. The affection is common in the tropics.

**Treatment.**—The furuncular openings should be syringed with a solution of carbolic acid.

**PULEX PENETRANS**

*Synonyms.*—Sand-flea; Jigger.

**Symptoms.**—The minute sand-fly penetrates the skin, usually at the toes, giving rise, in about a week, to painful edema, pustulation, and at times ulceration and gangrene. The affection is confined to tropical countries.

**Treatment.**—The insect should be extracted with a blunt needle. The application of chloroform will kill the parasite.

**PULEX IRRITANS**

*Synonym.*—Common flea.

**Symptoms.**—The flea-bite consists of a hemorrhagic punctum with an erythematous halo. In individuals with sensitive skin a wheal develops.

**Treatment.**—Lotions containing ammonia, thymol, or carbolic acid.

**CIMEX LECTULARIUS**

*Synonym.*—Bedbug.

**Symptoms.**—This parasite preys upon the skin, sucking the blood of the individual attacked. An inflammatory papule or wheal with a central hemorrhagic punctum marks the site of the bite.

**Treatment.**—Consists of applications of ammonia water, carbolic-acid solution, etc.

**CULEX**

*Synonyms.*—Gnat; Mosquito.

**Symptoms.**—The lesions produced by the mosquito consist of an erythematous spot or wheal.

**Treatment.**—A solution of carbolic acid or ammonia will relieve the itching.

## CLASS IV. HEMORRHAGIAE—HEMORRHAGES

## PURPURA

*Derivation.*—Πορφύρα, purple.

**Definition.**—Purpura is a hemorrhagic manifestation, characterized by the appearance, on the skin, of variously sized and shaped reddish-purple macules, not disappearing under pressure.

Purpura should be regarded not as a disease, but rather as a symptom; it is associated with many different morbid conditions and merits, therefore, separate consideration. Nearly all infectious eruptive diseases may at times be characterized by hemic extravasation into the skin. In most cases such purpuric conditions indicate malignancy, as, for instance, hemorrhagic small-pox, scarlet fever, or measles. In typhus and cerebrospinal meningitis hemorrhagic exudation is a regular feature of the eruption. Purpura may occur in malaria, diphtheria, and septic conditions.

There are other purpuras, however, unassociated with serious infectious diseases, which more particularly merit description in a book on skin diseases.

**Symptoms.**—There are three chief varieties of purpura, distinguished by the premonitory and concomitant constitutional symptoms, by the extent of hemorrhagic extravasation, and by the cause: (1) Purpura simplex. (2) Purpura rheumatica. (3) Purpura hæmorrhagica.

*Purpura Simplex.*—The eruption usually comes out suddenly, and consists of pin-head- to pea-sized round, oval, or irregular claret-red or purplish spots. They are circumscribed, smooth, and non-elevated, and are symmetrically distributed, tending particularly to occur upon the lower extremities. Subjective symptoms are, as a rule, absent. There is commonly no systemic disturbance, although slight lassitude and malaise may be present. The disease tends to a favorable termination in the course of a few weeks.

*Purpura Rheumatica (Peliosis Rheumatica; Schoenlein's Disease).*—This variety of purpura is ushered in with fever, lassitude, anorexia, and rheumatoid pains, particularly in the lower extremities, the joints of which may be swollen. The eruption consists of well-defined, split-pea- to finger-nail-sized hemor-



rhagic patches, which may be slightly elevated or level with the skin. At first of a pinkish, reddish, or purplish color, they later pass through the color transitions of all ecchymoses. The eruption is more or less generalized, but is most marked, as a rule, upon the extremities.

The disease may last a few weeks or may persist, in the form of relapses, for several months. The arthritic pains vary in intensity, being in some cases mild and in others severe. It is by no means proved that the process is rheumatic in the



Fig. 104.—Purpura simplex occurring during convalescence from small-pox.

strict sense of that term. The condition is closely allied to and may be associated with erythema multiforme. Cases are recorded in which severe visceral disorders existed, affecting particularly the kidneys and heart.

*Purpura Hæmorrhagica (Morbus Maculosus Werlhofii; Land Scurvy).*—The onset of the hemorrhagic form is signaled by the occurrence of fever and symptoms of systemic depression. The eruption consists of hemorrhagic patches, varying in size from a small coin to the palm of the hand, which come out suddenly and in considerable numbers. The trunk and extremi-

ties are the regions usually involved. At the same time bleeding from the mouth, gums, nostrils, bowels, bladder, etc., may take place. The disease may terminate in a fortnight or may continue for weeks. In a certain number of cases it proves fatal.

A *fulminating* form of purpura (*purpura fulminans*), with profound septic or toxic symptoms and rapid death, has been described.

**Etiology.**—Purpura is, in the vast majority, if not all, cases, the result of the action of a poison on the blood and blood-vessel walls. As has been stated, purpura is common in various infectious diseases. It may also be caused by drugs and auto-



Fig. 105.—Purpura hæmorrhagica occurring during convalescence from scarlet fever and associated with pericarditis, pleuritis, and articular swelling. Fatal termination (Welch and Schamberg).

toxins. The iodids, bromids, arsenic, chloral, quinin, salicylates, copaiba, etc., may all give rise, in susceptible subjects, to purpuric eruptions. Most of the ordinary purpuras are doubtless due to autotoxins resulting from faulty metabolism. Not infrequently renal insufficiency or disease is present. Osler regards purpura, erythema multiforme, urticaria, and angioneurotic edema in many cases as interchangeable expressions of metabolic errors.

**Diagnosis.**—The evident hemorrhagic nature of the lesions, as evidenced by their failure to disappear upon pressure, distinguishes them as purpuric. Purpura hæmorrhagica may be confounded with scorbutus:

## SCORBUTUS.

1. Occurs in those subject to lack of vegetable food and to bad hygiene.
2. Definite antecedent symptoms: weakness, impaired circulation, etc.
3. Onset slow.
4. Gums spongy, swollen, and bleeding; teeth loose.
5. Severe muscular pains.
6. Brawny infiltration of lower extremities.
7. Hemorrhages from mucous membranes, not, as a rule, profuse.

## PURPURA HÆMORRHAGICA.

1. No such etiologic relationship.
2. Antecedent signs slight or absent.
3. Onset sudden.
4. Gums often bleeding, but not swollen.
5. Less marked.
6. Not present.
7. Hemorrhages from mucous membranes often so severe as to prove fatal.

**Prognosis.**—In purpura simplex and rheumatica the prognosis is favorable, recovery taking place in several weeks or months. In purpura hæmorrhagica the prognosis is more guarded, a certain number of cases succumbing to internal hemorrhages. Much depends upon the cause.

**Treatment.**—The treatment of purpura must be adapted to the exigencies of the individual case. The treatment of the patient is more important than that of the disease. Ergot, tincture of the chlorid of iron, quinin, turpentine, and the mineral acids are useful in all forms of the disease. I have, in several cases, found turpentine, in five-minim doses, given in tragacanth emulsion, particularly efficacious. The combination may be flavored with syrup of lemon. In purpura rheumatica and hæmorrhagica the patient should be confined to bed and placed upon a nutritious and easily assimilable diet. Locally, astringent lotions and ice, if necessary, may be employed.

## CLASS V. HYPERTROPHIAE—HYPERTROPHIES

## LENTIGO

*Derivation.*—*L.*, *lens*, a lentil. *Synonyms.*—Freckles; Ephelides.

**Definition.**—Lentigo consists of pin-head- to pea-sized, yellowish, brownish, or blackish spots of pigment, occurring chiefly on the face and hands.

**Symptoms.**—The lesions, commonly known as freckles, are

pin-head- to pea-sized, round, oval, or irregular, and of a yellowish, brownish, or blackish color. They occur chiefly upon the face and the backs of the hands, although they are occasionally observed on the trunk. They are more common during adolescence than at any other period, although they often develop in children of seven or eight years. Freckles are more marked in individuals of blonde complexion, particularly red-haired subjects. They ordinarily make their appearance during the summer, and fade, partially or completely, during the cold seasons. A form of freckle-like pigmentation is sometimes observed with other senile changes in the skin.

**Etiology.**—The condition is due to exposure to the chemical or actinic rays of the sun. They may also be produced by exposure to arc-light or to the *x*-rays. Some writers believe that a congenital predisposition is necessary.

**Pathology.**—Freckles are due to an increased deposition of pigment in circumscribed areas of cells in the basal layer of the epidermis.

**Prognosis.**—A disappearance of the freckles may be brought about by treatment, but they are extremely apt to return.

**Treatment.**—The object of treatment is to produce an exfoliation of the epidermal cells containing the pigment. For this purpose solutions of corrosive sublimate, acetic acid, and like preparations are used. I have found the following preparation efficacious:

|    |                          |                    |
|----|--------------------------|--------------------|
| R. | Hydrarg. bichloridi..... | gr. iv-vj;         |
|    | Glycerini.....           | f3ij;              |
|    | Spirit. vini rect.       |                    |
|    | Aquæ cologniensis }      | ..... āā f3iss.—M. |
|    | Aquæ                     |                    |

The lotion is applied to the freckles two or three times a day on absorbent cotton. As soon as redness appears, the applications are interrupted and a little emollient ointment, such as cold-cream, applied. The freckles disappear with the mild desquamation that follows. Different persons vary in their reaction to a lotion of this character, and its strength must be diminished or increased according to indications. It is well to use the weaker lotion first. Instead of a lotion, a desquamating ointment may be used. I have used the following combination with satisfactory results:

|                           |                      |
|---------------------------|----------------------|
| R. Acidi salicylici ..... | gr. xx-xxx;          |
| Hydrargyri ammoniat.....  | gr. xl-3j;           |
| Lanolin                   | }      āā    ʒiv.—M. |
| Ung. aquæ rosæ }          |                      |

It is well to begin with the weak strength and then increase.

The use of large protective hats and closely meshed red or black veils in the warm months tends to prevent the development of freckles.

### CHLOASMA

*Derivation.*—*χλωάζειν*, to be pale green.

**Definition.**—Chloasma is characterized by yellowish, brownish, or blackish pigmentation of the skin, occurring in variously sized and shaped patches or as a diffuse discoloration.

**Symptoms.**—The patches may be any size from a coin to the palm of the hand or larger. They are irregular or rounded, with fairly well-defined borders. They are usually fawn-colored, yellowish, brownish, or blackish (melanoderma). In the diffuse form the color merges imperceptibly into the surrounding skin. The patches are often referred to in common parlance as "liver-spots." The affection is most frequently seen upon the face.

**Etiology.**—There are two varieties: *idiopathic chloasma*, due to external causes, and *symptomatic chloasma*, due to internal causes.

Under idiopathic chloasma may be included all the pigmentations that result from the use of local irritants, such as sinapisms, blisters, scratching, pressure, friction, solar rays (tanning), etc.

Symptomatic chloasma includes in its category the pigmentation seen in association with visceral and general diseases, such as uterine disease and pregnancy, Addison's disease, abdominal tuberculosis, cancer, malaria, exophthalmic goiter, enlarged liver, etc. In these cases the pigmentation is usually diffuse and may involve large areas of cutaneous surface.

**Chloasma Uterinum.**—This is most commonly seen during pregnancy, although it is often observed in pathologic conditions of the uterus and the ovaries. The patches are yellowish or brownish in color, and are usually located about the forehead, eyelids, and cheeks.

In *exophthalmic goiter*, or *Graves' disease*, one occasionally observes pigmentation in small areas, larger patches, or as a diffuse discoloration.

In *Addison's disease* the pigmentation is of a brownish, olive-greenish, or bronze tint. It may be general or partial. The mucous membrane of the mouth is not infrequently discolored in patches. The prolonged administration of silver may produce a permanent bluish-gray or slate-colored discoloration of the skin (*argyria*). A diffuse brownish pigmentation results in rare cases from the long-continued use of *arsenic*.

**Etiology and Pathology.**—The only change is an increased deposition of pigment in the mucous layer of the epidermis. It is not improbable that pathologic conditions of the sympathetic nervous system play an important rôle in symptomatic chloasma. It is rather significant that most of the enumerated diseases in which pigmentation occurs affect some abdominal organ. The compromising of the sympathetic nerves or ganglia so richly supplied to the abdominal cavity might explain the effect of abdominal growths.

**Diagnosis.**—Chloasma may be distinguished from tinea versicolor by the presence of the former upon the face, the paucity of the patches, and the absence of furfuraceous scaling and of a fungous parasite.

**Prognosis.**—Depends upon the removability of the cause. Local applications have, as a rule, but a temporary influence.

**Treatment.**—If the pigmentation be due to a systemic cause, this should naturally be treated.

Locally, the same measures are employed as in the treatment of lentigo. Duhring recommends:

R. Hydrarg. chlor. corrosiv..... gr. vj;  
Tinct. benzoin. comp..... fʒiss;  
Emuls. amygdal. amar..... fʒiij.—M.  
Sig.—Apply night and morning.

Or the following ointment, recommended by Kaposi, may be employed:

R. Hydrarg. ammoniat..... ʒi;  
Sodæ biborat..... ʒi;  
Ol. rosmarin..... ʒi;  
Ung. simpl..... ʒj.—M.

## NÆVUS PIGMENTOSUS

*Derivation.*—L., *nævus*, a mark. *Synonym.*—Pigmentary mole.

**Definition.**—A circumscribed pigmentary deposit, congenital, with or without associated hypertrophic cutaneous structures. The term “nevus” is

many writers to a growth which is either congenital or which appears shortly after birth. Identical lesions may develop many years after infancy; the propriety of designating such growths as nevi is questioned by some.

**Symptoms.**—A "mole" may consist merely of a circumscribed deposit of pigment or there may be, in addition, hypertrophy of the papillæ, of the hairs, and of the connective tissue. Nevi vary in size from a pea to the palm of the hand or larger, are rough or smooth, elevated or non-elevated, and of a brownish or blackish color.

According to the cutaneous structures involved, various forms of pigmentary nevi are distinguished:

*Nævus spilus* is a term given to a smooth, flat, pigmented nevus devoid of hair.

*Nævus pilosus* is a pigmented nevus covered with a growth of downy or stiff hairs.

*Nævus verrucosus* is a pigmented nevus with an irregular or wart-like surface.

*Nævus lipomatodes* is an elevated, pigmented nevus with connective-tissue and fat hypertrophy.

*Nævus linearis* is a variety in which pigmentary or, more commonly, warty lesions develop in lines or streaks, frequently following the line of nerves. These nevi are often unilateral—*nævus unius lateris*. They may be congenital, but not infrequently develop during youth.

**Etiology.**—Obscure. Hairy moles are apt to be congenital, non-hairy ones, acquired.

**Pathology.**—There is an increased pigment deposit in the cells of the rete mucosum and also in the corium. In *nævus verrucosus* the papillæ are greatly hypertrophied. There is often more or less connective-tissue hypertrophy.

**Treatment.**—The growths may be removed by means of the knife, caustics, electrolysis, or with Unna's microburner, which is practically a needle-pointed Paquelin cautery. For circumscribed elevated growths the microburner is admirable. Hairy moles may be successfully treated with the x-rays. Pusey has obtained excellent results with solid carbon dioxid; liquid air has also been used, but the latter is more difficult to obtain and to preserve.

## CALLOSITAS

*Derivation.*—L., *callus*, hard flesh. *Synonyms.*—Callus; Callosity; Tylosis.

**Definition.**—Callositas consists of hard, circumscribed thickenings of the horny epidermis, usually involving the hands and feet, and due to hypertrophy of the stratum corneum.

**Symptoms.**—The condition occurs as slightly elevated, dense, horny patches, of variable size, grayish or yellowish in color. The favorite seats are the palms, soles, fingers, and toes. Inflammation is, as a rule, absent, although it may be present and terminate in abscess. When located upon the soles, considerable pain in walking is often caused, particularly when a thin-soled shoe is worn.

**Etiology.**—The cause of callus is the continued or intermittent application of pressure or friction—upon the hands, from the use of various tools; upon the feet, from improperly fitting shoes. In many occupation callosities the horny overgrowth is essential to the continuance of the labor without discomfort or injury to the artisan.

**Pathology.**—The condition is due to a hypertrophy of the horny layer of the epidermis.

**Treatment.**—When treatment is desired, the hardened skin may be pared off with a sharp knife after preliminary softening by means of hot water. Instead of this, a 10 to 25 per cent. salicylic-acid plaster may be worn for some days. The plaster should be changed daily and the softened epidermis removed. Another treatment is cauterization with a stick of nitrate of silver, two or three times a week, the hardened skin being shaved off at each application.

In occupation callosities change of work is often followed by spontaneous involution.

## CLAVUS

*Derivation.*—L., *clavus*, a nail. *Synonym.*—Corn.

**Definition.**—Clavus is a small, circumscribed, deep-seated, painful horny growth, usually situated upon the toes.

**Symptoms.**—The usual seat of corns is the dorsal surface of the toes. They are pea-sized or larger, rounded, dense, horny formations that may be single or multiple. Occurring between the toes, maceration of the epidermis takes place, with the production of a soft corn. Corns are painful upon pressure and



often spontaneously painful, being influenced by weather changes. Corns occurring upon the soles of the feet give rise to great discomfort.

**Etiology.**—Continued pressure or friction from improperly fitting shoes.

**Pathology.**—There is hypertrophy of the horny layer, as in callus; but there is also a central conical core, the apex of which rests upon the papillary layer of the skin. It is on account of the latter condition that pressure produces pain.

**Treatment.**—The removal of the cause and the use of properly fitting footwear are important therapeutic measures.

Corns may be removed by paring off the hypertrophied epidermis after having previously softened it with soap and immersion in hot water. The central core may be excised with a small scalpel. To prevent return, a perforated felt plaster should be worn and daily soaping of the part resorted to.

Instead of using the knife, keratolytic substances, such as salicylic acid, may be used. This may be employed as a 25 per cent. plaster or in collodion.

|                          |         |
|--------------------------|---------|
| R. Acidi salicylici..... | 3j;     |
| Ol. ricini.....          | ℥x;     |
| Collodii.....            | f3j.—M. |

The collodion should be painted on twice a day, a hot foot-bath being taken every few days to remove the softened epidermis. Soft corns may be treated with the stick of nitrate of silver or acetic acid and the interposition of absorbent cotton.

### CORNU CUTANEUM

*Derivation.*—L., *cornu*, a horn. *Synonym.*—Cutaneous horn.

**Definition.**—Cornu cutaneum is a circumscribed horny outgrowth of the skin, of variable size and shape. The condition is rare.

**Symptoms.**—Cutaneous horns are hard, dry, laminated excrescences; not differing materially from the horns of lower animals. They are grayish, yellowish, or brownish in color, usually conical and tapering, and are apt to be curved or twisted, rather than straight. They are commonly small, about one inch in length, although horns twelve inches long have been observed. They are usually single.

The horn is concave at its skin insertion, the concavity rest-

ing upon normal or hypertrophied papillæ. There is, as a rule, no pain unless the part is injured, when inflammation and supuration may result. When the horn is shed, as occasionally takes place, reformation usually occurs. Quite a proportion of cases terminate in epithelioma.

The scalp and face are the seats of predilection. I have seen one grow from the vermillion border of the lip; this terminated in a buccal cancer.

**Etiology.**—Horns may have their origin in senile warts,



Fig. 106.—Horn upon the vermillion border of the lip, with carcinoma extending from the base along the buccal mucous membrane.

sebaceous cysts, or scars. They usually develop after the age of forty, although they may occur in infancy.

**Pathology.**—Horns are composed of densely laminated cornified cells, arranged in concentric columns. There is at first a hypertrophy of the rete mucosum. Often the papillæ at the base are enlarged. In about 12 per cent. of horns epithelioma develops at the base of the lesion.

**Treatment.**—Horns should be surgically removed; if there is thickening at the base, the entire diseased area should be included in the area of excision.

## ACANTHOSIS NIGRICANS

Under the title *acanthosis nigricans*, Pollitzer and, at the same time, Janovsky, described a disease characterized by more or less generalized pigmentation of the skin accompanied by warty growths. About thirty cases have now been recorded.

After a rapid or slow evolution the cutaneous surface generally, but more particularly of the face, neck, abdomen, back of hands, and flexures, such as the axillæ, groins, and nates, become the seat of a yellowish, brownish, or blackish pigmentation. The skin in these regions is thickened, and the natural furrows exaggerated. There soon appear warty growths, which may be discrete or so closely aggregated as to suggest a verrucose nevus. At times, lentiginous spots and lesions resembling seborrheic warts are observed. The mucous membrane of the mouth is often affected, the tongue, lips, and gums presenting a granular or papillomatous appearance. Nearly all cases terminate fatally after a course of some months or a few years.

The disease has only been observed in adult life. Carcinoma, especially of the stomach or uterus, has occurred sufficiently often to suggest a causal relationship.

**Treatment** is entirely unsatisfactory.

## ICHTHYOSIS

*Derivation.*—*Ichthys*, a fish. *Synonym.*—Fish-skin disease.

**Definition.**—A congenital chronic hypertrophic disease, characterized by dryness and scaliness of the skin and a variable amount of papillary hypertrophy.

**Symptoms.**—Two forms of the disease are distinguished—*ichthyosis simplex* and *ichthyosis hystrix*.

**Ichthyosis simplex** is the variety ordinarily encountered. It varies greatly in intensity, from merely an abnormal dryness of the skin to a most pronounced and disfiguring disease. In the mildest grade the skin is dry and harsh, the furrows more pronounced than normal, and a slight scaliness is present. To this form the term *xeroderma* is often applied. In some cases there is a prominence of the hair-follicles, particularly upon the extremities, producing a *keratosis pilaris*.

Frequently, however, the disease is more pronounced, exhibiting variously sized reticulated scales, which may be small and thin or large and thick, resembling fish-scales. Upon the arms and legs the epidermis forms diamond-shaped or polygonal

plates, bounded by the natural furrows of the skin, and, in severe cases, bearing a resemblance to alligator skin. The scales are often of a brownish or greenish tint.

Ichthyosis simplex involves more or less of the entire body, with especial development upon the extensor surfaces of the extremities. The scalp, as a rule, is dry and scaly, as is also the face when it participates in the process. The palms and soles often show great exaggeration of the lines.

The course of ichthyosis is eminently chronic. The disease begins usually in the first or second year of life, increases in severity until adult age is reached, and then remains stationary, thus continuing throughout the patient's life.

Ichthyosis is markedly influenced by the seasons. It is always worse in cold than in hot weather. In the spring and summer, when perspiration is increased, great improvement takes place. Itching is often present in mild form. The skin is sensitive, particularly in cold weather, and eczema is commonly engrafted upon the skin of ichthyotic patients.

**Ichthyosis hystrix** is a rarer, more severe, and more disfiguring affection. It is characterized by papillary and corneous hypertrophy, showing itself clinically as irregular or linear, rugous, warty or spinous, horny patches. In some



Fig. 107.—Ichthyosis of moderate grade.

instances a resemblance to the corrugated bark of a tree is strongly suggested. Ichthyosis hystrix affects only limited areas of the skin, such as the arm, neck, axillæ, umbilicus, etc. Some of these cases are entirely unrelated to true ichthyosis, and should be grouped with nevi and papillomata.

**Ichthyosis congenita** (" *harlequin fetus* ") is a form occurring in infants born prematurely or at term, and exhibiting at birth



Fig. 108.—Ichthyosis.

a cracked, parchment-like skin, with a tendency to form plates separated by furrows or actual fissures.

The skin surface looks at times as if it were covered with cracked oiled paper. These infants are usually still born or die shortly afterward.

**Etiology.**—Ichthyosis is a congenital disease, although it does not, as a rule, manifest itself before the first or second year. It is caused by a developmental and nutritional defect of the skin, with disturbance of the sebaceous and sudorific functions. A hereditary influence is observed in many instances.

**Pathology.**—Owing to the congenital defect, cornification is abnormal. The rete cells are said to be directly transformed into horny plates. The horny layer is hypertrophic, producing a hyperkeratosis. The rete is thickened. Degenerative changes in the sweat- and sebaceous glands have been described. The follicular orifices often contain horny plugs.

**Diagnosis.**—The characteristic features of ichthyosis are: the harsh dry skin, furfuraceous scales, and polygonal plates, the localization of the eruption, the history, and the absence of inflammatory symptoms. Mild cases might be confounded with a squamous eczema.

**Prognosis.**—The prognosis is unfavorable as to cure. Considerable relief, however, may be afforded by proper treatment.

**Treatment.**—Internal treatment is of little or no value. External treatment is to be solely relied upon. This has for its object the removal of the epidermal scales and the softening of the skin with unguentous substances.

Baths are of great value, and are to be employed frequently. Either a simple warm bath or an alkaline bath (sodium bicarbonate, 4 to 8 ounces to bath) may be used. In mild cases frequent bathing, followed by the inunction of some oily or fatty substance, will be all-sufficient. For this purpose coconut oil, petrolatum, adeps, olive-oil, oil of sweet almonds, diluted glycerin, etc., may be employed. A simple and efficient inunction consists of:

|                 |   |                 |
|-----------------|---|-----------------|
| R. Lanolin.     | } | ..... āā 3j.—M. |
| Adipis benzoat. |   |                 |

In severe cases the following plan is advised: friction with soft soap twice daily for four or five days, followed by a bath and the inunction of the following:

|                                |          |
|--------------------------------|----------|
| R. Acid. salicylici.....       | gr. xl;  |
| Ol. cocois (cocoanut oil)..... | f 3viij; |
| Ol. lavand.....                | q. s.—M. |

Iodid of potassium in ointment form has been highly spoken of:

℞. Potass. iodid..... gr. xx;  
 Olei bubuli } .....āā 3ss;  
 Adipis }  
 Glycerinæ..... f3j.—M.  
 Sig.—Ft. ung.

In ichthyosis hystrix, caustics, the Paquelin cautery, or the knife may be necessary to remove the hypertrophic tissues.

### VERRUCA

*Derivation.*—L., *verruca*, an excrescence. *Synonym.*—Warts.

**Definition.**—Verruca consists of a pin-head- to bean-sized, circumscribed elevation of the skin, due to epidermal and papillary hypertrophy.

**Symptoms.**—Various forms of warts are distinguished.



Fig. 109.—Verruca vulgaris.

*Verruca Vulgaris.*—This is the common wart seen upon the hands. It is a pea-sized, rounded, rough or smooth, broad-based elevation, yellow or brownish in color. It may occur singly or in numbers.

*Verruca Plana.*—This is distinguished from the ordinary wart by being flat and smooth. Flat warts are pea- or finger-

nail-sized, but slightly elevated, and of a brownish or blackish color. They occur in numbers, usually upon the backs of elderly individuals (*verruca senilis*). Occasionally numerous small flat warts occur upon the face, particularly of young subjects, developing with considerable rapidity (*verruca plana juvenilis*). I have seen warts in several patients develop upon the lips and upon the dorsum of the tongue from autoinoculation.



Fig. 110.—Keratosis senilis—so-called "senile warts." Many pigmented areas present.

*Verruca Filiformis*.—These warts are slender, thread-like outgrowths, about one-eighth of an inch in length, occurring chiefly upon the face, eyelids, and neck.

*Verruca Digitata*.—These are slightly elevated, pea- to finger-nail-sized excrescences, with numerous digitations branching out from the base. The scalp is the most common site.

*Verruca Acuminata* (*Pointed Condyloma*; *Venereal Warts*).—These are pinkish or reddish, sessile or pedunculated, pointed vegetations, occurring about the mucocuta<sup>n</sup> \*s (penis,



anus, labia, mouth, etc.) of young individuals. Occurring upon the genitals, they are bathed in an offensive puriform secretion. These warts grow rapidly, not infrequently reaching the size of an egg. They bear at times a strong resemblance to a raspberry, cauliflower, or cockscomb.

**Etiology.**—It is probable that most forms of warts, save verruca senilis, are due to microorganisms, and that they are autoinoculable and contagious.

Venereal warts are caused by contact with irritating secretions, which contain, in all probability, the causal microorganisms.

**Pathology.**—Warts consist of a hyperplasia of the papillæ of the corium and the overlying layers of the epidermis. A vascular loop is found in the center of each wart.

In the acuminate variety the connective-tissue and vascular hypertrophy is marked, while the horny layer is but slightly hyperplastic.

**Treatment.**—Warts may be removed by caustics, excision, erosion, or electrolysis. The best caustics to be employed are nitric acid, caustic potash, chromium trioxid, or glacial acetic acid. These should be cautiously applied from time to time until the wart disappears. An excellent method is to scrape away the wart with a curet under local anesthesia induced by injecting a 2 per cent. solution of eucain, and then apply the stick of nitrate of silver to the base.

Salicylic acid in collodion or alcohol is often successful in causing the disappearance of warts:

R. Acidi salicylici..... ʒj;  
 Spirit. vini rect..... fʒj.—M.  
 Sig.—Apply two or three times a day.

Warts on the scalp will sometimes disappear after the use of:

R. Hydrarg. ammoniat. .... ʒj-ij;  
 Adipis benzoat. .... ʒj.—M.

The use of 1 : 500 corrosive sublimate solution in 50 per cent. alcohol is sometimes efficacious, as is also an alcoholic solution of resorcin, thirty grains to the ounce.

Single warts may be removed by the application of radium or the high-frequency current, often in one treatment. Filiform or digitate warts may be snipped off with a curved scissors, the base being subsequently cauterized. Venereal warts may be

washed with solutions of alum, tannin, or chlorinated soda, and then dusted with calomel, or they may be cauterized with nitric acid, phenol, or chromium trioxid. Cleanliness should be rigorously enjoined.

Warts upon the soles of the feet are best treated by using a 25 per cent. salicylic plaster on them.

### POROKERATOSIS

Mibelli, and later Resphigi, made known, under the name of porokeratosis, a hitherto undescribed affection, characterized by eccentrically spreading patches of hyperkeratosis with a sharp elevated border. The disease prefers the extensor surfaces of the hands, feet, neck, and the mucous membrane of



Fig. 111.—Porokeratosis (courtesy of Dr. G. W. Wende).

the mouth. It begins as warty-looking papules which slowly enlarge by peripheral extension, producing plaques of various size and shape. The plaque is surrounded by a rather sharply defined horny ridge or wall, the crest of which often exhibits a continuous or broken furrow or sulcus. The bottom of the furrow may contain a longitudinal, cord-like ridge, blackish dots, or conical corneous projections. The area within the border

may be normal or, as occurs more commonly, the skin is either thickened and callous or atrophic and glossy. It may be raised or depressed. The patches vary in diameter from a centimeter to the width of a limb. The young patches are usually circular, but the older ones are inclined to have an irregular wavy or zigzag outline. Merely one plaque may be present, but usually they are multiple and sometimes numerous.

The disease begins in the first decade of life in the vast majority of cases. The affection spreads very slowly, occupying a period of years. A hereditary influence is often manifest. Gilchrist reported eleven cases occurring in four generations of the same family. The cause of the disease is not known. Under the microscope the affection is seen to be a hyperkeratosis affecting chiefly the deeper horny and upper rete strata. The sweat-ducts are implicated in the process, and to a less extent the sebaceous glands and hair-follicles.

Lesions have been cured with the electric needle.

### COMEDO

*Derivation.*—L., *comedo*, glutton, spendthrift. *Synonyms.*—Blackheads; Flesh-worms.

**Definition.**—Comedo is a condition characterized by blackish, pin-head-sized plugs of sebum lying in the mouths of the sebaceous ducts.

Comedo is an affection so commonly precedent to and accompanying acne as to belong to the symptomatology of that disease. Sabouraud regards comedones as the primary lesions of acne and the connecting link between seborrhea and acne.

**Symptoms.**—Comedones appear as yellowish, brownish, bluish, or blackish points, occupying the mouths of the sebaceous ducts. The "blackhead" is made up of sebum, epithelial debris, and microorganisms. When the sebaceous material is soft, pressure causes it to emerge from the follicle in a long, thread-like filament. When it is firm and inspissated, it is expressed as an oval, shining, somewhat translucent, yellowish body, with a dark-colored point corresponding to the external summit of the plug. This is called by Sabouraud the "seborrheic cocoon."

The dark color is due partly to dust from without and partly to chemical changes in the secretion. At times one sees bluish-black comedones with a bluish discoloration of the skin immedi-

ately surrounding the plug, as if due to the deposition of a pigment.

Comedones are extremely liable to undergo inflammation and give rise to acne papules or pustules.

The course of the affection is essentially chronic.

**Etiology.**—The same causes which predispose to the development of acne, namely, puberty, dyspepsia, constipation, anemia, menstrual disturbances, etc., exercise a like influence in comedo. Unna, Hodara, and Sabouraud regard the microbacillus found in all comedones as the cause of the condition. The "acarus or demodex folliculorum," an animal parasite occasionally discovered in the sebaceous follicles, is without etiologic importance. Comedones are often produced artificially by deposition from the atmosphere of various solid impurities. Thus tar, brass, and iron workers are frequent sufferers from this affection.

**Pathology.**—Unna claims that there is a thickening of the corneous layer of the external surface, and consequently a closure of the duct. The horny lining of the ducts undergoes similar change, and scales are thrown into the canal which, combining with the sebum, form the comedo.

**Prognosis.**—As a rule, the condition may be remedied by appropriate treatment.

**Treatment.**—The systemic treatment, as in acne, aims at a correction of the predisposing causes. Strychnin, iron, cod-liver oil, and the hypophosphites are often required.

Locally, applications designed to remove the plugs are indicated. The larger ones should be squeezed out with a comedo extractor (Fig. 51). The tincture of green soap (*tinctura saponis viridis*) is an excellent remedy in sluggish cases. Equal parts of alcohol and ether make a nice sebaceous solvent.

Salves containing sand or chalk are sometimes used. The appended formula is a useful example:

|    |                |       |          |     |     |
|----|----------------|-------|----------|-----|-----|
| R. | Sulph. præcip. | }     | .....    | ââ  | 5j; |
|    | Saponis mollis | }     | .....    |     |     |
|    | Pulv. cretæ    | ..... |          | ss; |     |
|    | Vaselini       | ..... | q. s. ad | 5j. | —M. |

Or the following lotion may be used:

|    |                    |       |          |
|----|--------------------|-------|----------|
| R. | Acidi borici       | ..... | 5j;      |
|    | Spirit. vini rect. | ..... | f5iv.—M. |

The remedies in general are much the same as those employed in the treatment of acne.

### MILIUM

*Derivation.*—*L.*, *milium*, a millet-seed. *Synonyms.*—Grutum; Strophulus albidus.

**Definition.**—A condition characterized by the formation of small, round, yellow or pearly-white sebaceous bodies just beneath the epidermis.

**Symptoms.**—The lesions are most commonly found upon the cheeks in the malar region, but may occur upon the forehead and other parts of the face. They are also occasionally seen elsewhere. They consist of pin-point- to pin-head-sized yellowish or whitish elevations, hard to the touch. When incised and expressed, a small, irregular, whitish, glistening body is seen which may be of gritty consistence. They, at times, undergo calcareous change, producing the so-called *cutaneous calculi*.

**Etiology.**—Milia occur in infants and in young adults. The cause is obscure. They develop at times under scars and in the areas of former attacks of erysipelas and pemphigus.

**Pathology.**—Milia are believed to be due to the retention of sebaceous matter in superficially seated glands. Under the microscope they are found to consist of concentric layers of epithelial cells around a central core of fat and cells and surrounded by a thin capsule.

**Treatment.**—In infants, the use of soap and water is all that is necessary to remove the bodies. In adults the lesions should be incised and the contents expressed with a comedo remover. A small knife should be used, the procedure being practically painless and almost bloodless. No scarring follows the removal of the milia.

### CYSTIS SEBACEA

*Derivation.*—*Στίαρ*, fat. *Synonyms.*—Wen; Sebaceous cyst or tumor; Atheroma; Steatoma.

**Definition.**—A wen is a cyst containing sebaceous matter.

**Symptoms.**—The cysts are pea- to egg-sized, rounded or oval tumors, with a doughy consistence. Pressure often causes pitting. The seats of predilection are the scalp, face, neck, and back. They are ordinarily painless, and the overlying skin is pale. When inflamed, the skin becomes reddened. They may remain for many years without undergoing any change.

As a result of injury or without such cause, they may suddenly take on increased growth. Under such circumstances inflammation and suppuration commonly occur. Before suppuration, incision and pressure will cause extrusion of a cheesy-looking sebum in long filaments or tape-like masses.

**Pathology.**—They are due to accumulations of sebaceous matter in the glands; in other words, they are retention cysts.

**Treatment.**—The overlying skin should be incised, and the tumor with its capsule carefully dissected out. If the capsule is allowed to remain, recurrence usually follows. Sometimes a cure can be effected by incision, expression of contents, and the injection into the sac of tincture of iodine.

### MOLLUSCUM EPITHELIALE

*Derivation.*—L., *molluscus*, soft. *Synonym.*—Molluscum contagiosum.

**Definition.**—Molluscum epitheliale is a disease characterized by pin-head- to pea-sized or larger, smooth, semiglobular, waxy-white or pinkish elevations. The disease is uncommon.



Fig. 112.—Three tumors of molluscum contagiosum upon eyelid.

**Symptoms.**—The lesions are discrete, usually split-pea-sized, of the color of the skin, or pinkish, with often a distinct waxy appearance. The summits are somewhat flattened and contain a central, darkish opening from which a cheesy secretion may be expressed. Occasionally, an inspissated plug of material is seen projecting from the central orifice. They are usually situated upon the face, particularly

cheeks, and chin. They are also found upon the genitalia, the chest, and elsewhere. They increase slowly in size, often terminating in suppuration and thus spontaneously disappearing. As a rule, no scarring is left. The lesions are few, a half-dozen or more being the usual number present.



Fig. 113.—Molluscum contagiosum; contracted during an epidemic in a gymnasium, probably from the use of infected towels.

**Etiology.**—The disease occurs chiefly in children. It is to an extent contagious, although under ordinary circumstances but feebly so. Numerous examples of dissemination in families, schools, gymnasiums, and asylums are on record. The infec-

tion is sometimes transmitted through the use of towels. The disease has been successfully inoculated. Epithelial mollusca are seen at times upon the eyelids of pigeons and fowl; patients sometimes receive the infection from pet feathered creatures.

**Pathology.**—The growths consist of an enormous hyperplasia of the cells of the rete mucosum, the process in all probability beginning in the hair-follicles. The center of the molluscum tumor is made up of a number of lobules filled with ovoid or rounded, fatty-looking, degenerated epithelial cells, designated as "molluscum bodies."

**Diagnosis.**—The characteristic features of the disease are: the size of the lesions, their waxy appearance, the presence of a central orifice giving exit to a whitish secretion, and the history and course of the affection. The secretion examined under the microscope shows large ovoid bodies which take the eosin stain well.

**Prognosis.**—The condition sometimes disappears spontaneously. It is readily amenable to treatment.

**Treatment.**—The tumors may be destroyed by incision, expression of their contents, and cauterization of the cavity with the stick of nitrate of silver or carbolic acid. Small lesions may be bored with a tooth-pick moistened in carbolic acid or iodine. Unna's microburner is a convenient instrument to effect their disappearance.

Again, they may be curetted away or snipped off with a pair of curved scissors. Pedunculated growths may be ligated. Where the lesions are small, the following ointment may be vigorously rubbed in:

R. Hydrarg. ammoniat..... 3j;  
Ung. zinci oxidi ..... 3j.—M.

### KERATOSIS PILARIS

**Derivation.**—*Κέρας*, a horn. **Synonyms.**—Lichen pilaris; Pityriasis pilaris.

**Definition.**—Keratosis pilaris is a hypertrophic affection characterized by pin-head-sized epidermal accumulations at the mouths of the hair-follicles. This affection in its milder forms is quite common and often escapes notice or complaint.

**Symptoms.**—The extensor surfaces of the arms and thighs are the usual seats of the eruption. The lesions consist of closely aggregated, follicular, papulosquamous,



prominences, corresponding to the orifices of the hair-follicles. A hair pierces each elevation or is buried within it. The lesions are grayish, whitish, or blackish in color, and are made up of epidermal cells and sebum. At times the elevations are papular and have a reddish tint. The skin is dry and rough and feels to the hand passed over it not unlike a fine nutmeg-grater.

As a rule, itching is absent. The course of the disease is chronic.

**Etiology.**—Puberty is regarded as an etiologic factor, and infrequent bathing seems to be causal in some cases. Hyde believes the affection to be more common in people of unusual physical vigor.

**Pathology.**—The condition consists of an accumulation of horny cells and sebaceous material at the orifices of the hair-follicles. Inflammatory changes are sometimes present.

**Diagnosis.**—Keratosis pilaris is, as a rule, easy of diagnosis. It may be distinguished from "goose-flesh" (*cutis anserina*) by the permanence of the lesions as compared with their evanescence in the latter affection.

*Pityriasis rubra pilaris* is more wide-spread, exhibits lesions upon the scalp, dorsal surfaces of the phalanges, etc., and is accompanied by a seborrheic scaling of the surface.

The lesions of the *small papular syphiloderm* are more generally distributed, tend to group, are deeper seated, less scaly than those of keratosis pilaris, and are commonly associated with pustular lesions.

**Treatment.**—Simple or alkaline warm baths with the use of ordinary soap or *sapo mollis* will suffice for mild cases of short duration. In other cases this should be followed by the inunction of one of the simple ointments.

Daily cold sponge-baths and friction should be systematically employed.

### KERATOSIS FOLLICULARIS

**Synonyms.**—Psorospermosis; Darier's disease (*psorospermosse folliculaire végétante*).

**Definition.**—Keratosis follicularis is a hypertrophic affection characterized by pin-head- to pea-sized, dark-colored or normal tinted acuminate or rounded papules, sometimes with central conical plugs, marking the sites of the pilosebaceous follicles.

**Symptoms.**—The disease is exceedingly rare. The favorite seats of the eruption are the scalp, face, chest, loins, and inguinal region. The first lesions consist of pin-head-sized papules of the color of the skin; these gradually assume a deeper tint and become covered with a greasy sebaceous scale. On close inspection some of the papules are seen to contain a fatty plug which just projects from the follicular orifice and which can be removed with difficulty, leaving a pit-like depression. The papules may enlarge, coalesce, and form papillomatous vegetations upon apposing skin surfaces, as in the inguinal region. These vegetations are bathed in a puriform secretion which emits an extremely offensive odor. The disease runs a chronic and progressive course.

**Etiology.**—The disease is more common in males than in females, and occurs chiefly in childhood and adolescence. Heredity and contagion are possible causal factors.

**Pathology.**—The disease is primarily a hyperkeratosis of the hair and sebaceous follicles, with secondary hyperplasia of the interpapillary projections of the rete mucosum.

**Prognosis.**—No cures have been reported, but improvement may take place under treatment.

The disease was formerly believed to be due to psorosperms, but this view has been abandoned.

**Treatment.**—Frequent baths and inunctions with *sapo mollis* may be employed, followed by the use of a salicylated dusting-powder.

### HYPERTRICHOSIS

*Derivation.*—Υπερ, in excess; τριξ, hair. *Synonyms.*—Hirsuties; Hairiness; Hypertrophy of the hair; Superfluous hair.

**Definition.**—Hypertrichosis is a condition characterized by excessive hair-growth, either as regards number or coarseness.

**Symptoms.**—Hair may grow to an unnatural degree upon parts normally the seat of hair, as the mustache, beard, head, eyebrows, inside the nose, etc., or there may be an abnormal growth upon non-hairy regions, or rather regions normally covered by fine lanugo hair.

Almost the entire cutaneous surface, with the exception of the palms and soles, the last phalanges of the fingers and toes, the glans penis and prepuce, are normally supplied with whitish,

downy hair. Under certain circumstances these become hypertrophied and pigmented, increasing both in length and in diameter.

Hirsuties may be *congenital* or *acquired*. Usually the congenital hypertrichosis is partial, being limited to some special region, as over the sacrum. In rare instances remarkable cases of general hypertrichosis are encountered. A Russian named Andrian Jeftichew and his son Feodor were so covered as to give to their face the appearance of a terrier dog (dog-faced man).

The acquired variety of hypertrichosis in girls and women is the form which physicians are called upon to treat. The excessive hair-growth may involve the trunk and extremities, as well as the face, but ordinarily the face is chiefly or exclusively affected. The upper lip, chin, cheeks, and neck are the usual seats of the growth.

The amount of pilary development may be but a slight exaggeration of the normal down, or it may be so pronounced as to resemble masculine hirsutic vigor. The growth is more visible in brunettes than in blondes. It is common for the hair of the lip and chin to take on increased development as the period of the menopause is reached. Not infrequently, however, we see girls of twenty with an undesirable growth. The extent of the growth, and the amount of disfigurement occasioned thereby, is often exaggerated by the patient, who becomes hypersensitive and secludes herself to avoid attracting attention. In such cases treatment has for its object more than the mere cosmetic result, for the mental condition and happiness of the patient are at stake. These patients commonly resort to the use of depilatories, pumice-stone, or extracting with tweezers, all of which procedures increase the intensity of the growth.

Circumscribed congenital hypertrichosis occurring upon a pigmented or elevated base constitutes a hairy nevus (*nævus pilosus*).

**Etiology.**—The cause of hirsuties is obscure. Heredity is an important factor in many cases. Hair-growth is a secondary sexual characteristic; pilary activity accompanies puberty; at such times, and again at the menopause, perverted or excessive innervation may cause superfluous hair-growth. Cases are recorded in which menstrual disorders, uterine disease, pregnancy, etc., have led to transient or permanent hypertrichosis.

Congenital hirsuties may be associated with structural defects or anomalies of other organs, such as the teeth. The persistent use of stimulating liniments, of poultices, counterirritants, etc., may lead to local hypertrichosis. There is, however, little or no basis in fact for the belief held by many patients that the use of mild unguents, such as cold-cream or petrolatum, causes superfluous hair-growth.

**Treatment.**—The cases in which treatment is usually demanded are women with superfluous facial hair-growth. Superfluous hair may be temporarily removed by shaving, extraction, or the use of depilatories, but these procedures are to be condemned for facial hirsuties. The barium sulphid depilatory, the formula of which is given by Duhring, is one of the best:

|    |                     |             |
|----|---------------------|-------------|
| R. | Barii sulphid. .... | 3ij;        |
|    | Pulv. zinci oxidi } |             |
|    | Pulv. amyli }       | āā 3iij.—M. |

This is made into a paste with a little water and spread on the hairy region for ten to fifteen minutes. As soon as burning is experienced, it should be removed and followed by a bland ointment. Such applications must be repeated every few days according to the needs of the case.

The only permanent treatment of hirsuties is the use of the *x-rays* or *electrolysis*. The latter consists in the insertion of a fine needle into each hair-follicle, and then turning on an electric current, to destroy the hair-papilla. The operation is somewhat painful, but nearly always within the limit of toleration.

Stiff hairs alone are to be extirpated. The removal of downy or lanugo hairs is not to be attempted, as the result is likely to be unsatisfactory. The operation is performed in the following manner: A fine needle (iridoplatinum needle or a fine jeweler's broach), held firmly in a specially devised holder, is attached to the negative pole of a galvanic battery. The needle is gently inserted into the hair-follicle down to the papilla. The patient holds a moistened sponge electrode (positive pole) and makes the current by bringing it in contact with the palm of the other hand. In five to ten seconds a frothing occurs at the mouth of the follicle. The current is then broken by the release of the positive electrode, and the needle is withdrawn.

If the papilla has been destroyed, the hair will come out upon the slightest traction with a forceps. If it remains firm, the operation must be repeated. A current from one to two milliamperes is usually required.

A wheal-like elevation soon develops at the site of the operation, but disappears in the course of a few hours. Occasionally pustulation occurs.

To avoid scarring, attention should be paid to the following points: (1) The use of a fine needle; (2) the avoidance of too prolonged cauterization; (3) the avoidance of too strong a current; (4) care not to operate at the same sitting upon hairs in too close proximity: nevertheless, it lessens pain to restrict one's operations to a limited region rather than to remove hairs here and there, for a certain degree of anesthesia is produced.

Hot water, calamin lotion, or a 1 : 1000 solution of corrosive sublimate sopped on after the operation lessens the inflammation and the tendency to suppuration and scarring.

*The Depilatory Effect of the x-Rays.*—There is no question that the x-rays are capable of producing a permanent falling of hair. The depilation resulting from a few exposures is nearly always temporary. I believe that the x-rays should be used on facial hypertrichosis only in very severe and disfiguring cases in which the extent of the growth makes electrolysis a hopeless task. The fact that the hair-papillæ may be atrophied by the rays in itself indicates that other structures of the skin may undergo similar change. The Röntgen treatment requires a fine adjustment of the dosage to produce the best results. No greater reaction than an erythema should ever be produced. The technic of Freund is, I believe, to be preferred. Freund uses a high tube and secures depilation in about twenty treatments; brief supplementary courses are given every six weeks for a year and a half, to render the depilation permanent.

The Röntgen treatment is more expeditious, less painful, and less tedious to the patient and operator than electrolysis. It must, however, be employed with great skill and caution, and the patient should be apprised in advance that some thinning or wrinkling of the skin may be produced.

## ELEPHANTIASIS

*Derivation.*—'Ελέφας, an elephant. *Synonyms.*—Elephantiasis arabum; Pachydermia; Elephant leg; Barbadoes leg.

**Definition.**—Elephantiasis is a chronic hypertrophic disease of the skin and subcutaneous tissue, due to obstruction of the lymphatic channels, and resulting in enormous enlargement and thickening of the part, with papillary outgrowth.

**Symptoms.**—The most frequent seats of elephantiasis are the lower extremities, although the penis, scrotum, and clitoris may be affected, and, more rarely, the arms, lips, tongue, or ears.



Fig. 114.—Elephantiasis; American woman.

There are two forms of the disease—the one endemic, parasitic in origin, and indigenous to the tropics; the other, sporadic, due to inflammatory obstruction of lymphatic or blood-vessels, and observed in various countries. The tropical form is rare in the United States; we will, therefore, restrict our description to the ordinary variety.

The affection usually begins as an erysipelatoid inflammation, accompanied by fever, redness, swelling, heat, and pain. The condition may represent a dermatocellulitis, lymphangitis, or

phlebitis. After some days the inflammatory phenomena subside, but the affected part is observed to be larger than before. Similar attacks may recur from time to time, at intervals of weeks or months, the affected part increasing in size after each attack. Finally a state of chronic hypertrophy is reached, the skin and subcutaneous tissue are enormously thickened, and the member greatly increased in size.

The skin is glossy and tense, and the deeper structures resistant and dense; digital pressure produces but slight indentation or none at all. The surface may be pigmented, and exhibit warty excrescences or thickly studded papillomatous vegetations. These consist often of lymphatic varicosities, the elevations occasionally discharging a chylous or milky fluid. Between the papillary outgrowths fissures of varying depths are observed.

Maceration of the epidermis and the collection of decomposing sweat, sebum, and effete products give rise to an offensive odor. There is, as a rule, no pain, although during the acute exacerbations it may be severe. The enormous weight of the hypertrophied part may make locomotion difficult or even impossible. The course of the affection is chronic.

**Etiology.**—Elephantiasis is most common in tropical countries, particularly Africa, India, China, Japan, West Indies, etc., where it occurs chiefly in those subject to bad hygiene and poor food. Damp malarial districts are said to produce the largest number of cases. This is explicable upon the theory, now proposed, that the mosquito is the intermediate host of the filaria. The tropical form is due to inflammation and obstruction of the lymphatic vessels by the *Filaria sanguinis hominis*. The parasites are found in the blood at night.

Sporadic cases may be due to inflammatory obstruction of lymphatic and perhaps other vessels, as a result of repeated erysipelas, cellulitis, infection from ulcers, syphilis, pressure of scars or tumors, etc.

**Pathology.**—There is a hyperplasia, participated in by the subcutaneous tissue and all the layers of the skin. The chief change is in the subcutaneous tissue, which is enormously hypertrophied and traversed by irregular bundles of connective tissue. Where the surface of the skin is warty, the papillæ are greatly elongated. Both blood-vessels and lymphatics are enormously distended, the latter leading to dilated lymph-spaces. The neighboring lymphatic glands are enlarged. In

advanced cases the muscles undergo fatty degeneration and the bones become enlarged.

**Diagnosis.**—The history of recurrent erysipelatous inflammation, with slowly progressing hypertrophy, is peculiar to elephantiasis. In advanced cases the appearances are unmistakable.

**Prognosis.**—In the beginning the process may at times be arrested. When the growth is far advanced, treatment accomplishes but little.

**Treatment.**—The erysipelatous attacks are to be treated by rest, hot or cold applications, and the internal administration of salines and quinin.

Good food and hygiene, tonics, and change of climate are important matters in endemic cases. Elastic compression by means of a well-applied rubber bandage is the most efficient therapeutic measure. Green soap and the mercurial ointments may be rubbed into the skin.

In advanced elephantiasis of the leg one may resort to stretching or partial exsection of the sciatic nerve, to digital or instrumental compression, or even to ligation of the femoral artery.

Elephantiasis of the scrotum is best treated by amputation.

## DERMATOLYSIS

**Synonyms.**—Cutis pendula; Fibroma pendulum; Lax skin; "Elastic skin."

**Definition.**—Dermatolysis is a rare disease, characterized by hypertrophy and laxity of the skin and subcutaneous tissue, with a tendency to hang in folds.

Some writers apply the name dermatolysis to an abnormal laxity and elasticity of the skin with hypertrophy, as seen in the so-called "elastic-skin men."

**Symptoms.**—The condition may be congenital, or it may follow the involution of fibromatous lesions. The affected area may be limited or extensive. The subcutaneous tissue and the skin, with its component structures, hair, glands, etc., are all hypertrophied. In marked cases the skin, which is often rugose and pigmented, hangs in huge folds like a garment.

There are no subjective symptoms except the inconvenience occasioned by the size and weight of the growth.

**Etiology.**—The etiology is obscure. The condition is allied to fibroma mol



**Pathology.**—There is hypertrophy of all the structures of the skin and subcutaneous tissue.

In the so-called "elastic skin" the elastic tissue is normal, but the connective-tissue fibers are converted into a myxomatous-looking tissue.

**Treatment.**—The mass is to be excised when its location and extent permit. There is no tendency to recurrence.

### ONYCHAUXIS

*Derivation.*—ὄνυξ, a nail; αἰξέειν, to grow. *Synonym.*—Hypertrophy of the nail.

**Definition.**—Onychauxis is an affection characterized by an increase in the size of the nail, in length, in breadth, or in thickness.

**Symptoms.**—Hypertrophy of the nail may be congenital or acquired, idiopathic or symptomatic, as in ichthyosis or syphilis. The nail may be merely enlarged, the quality and texture remaining normal, or there may be coincident structural changes. Thus, the nail may become roughened, furrowed, and opaque, and have a yellowish-brownish or blackish hue.

Lateral growth may result in inflammation of the surrounding tissues (paronychia), or the matrix itself may undergo inflammation (onychia).

*Onychogryphosis* is a term used to denote nails which have become curved and claw-like.

**Etiology.**—In acquired cases the condition is usually a manifestation of psoriasis, ichthyosis, leprosy, syphilis, eczema, etc. The condition may also result from inflammatory changes in the matrix.

**Treatment.**—The excessive nail tissue should be removed with a knife or scissors. Symptomatic cases should be treated in connection with the associated disease.

In paronychia the imbedded nail-edge should be trimmed off and a minute pledget of cotton packed in between the nail and the soft parts.

### ACROMEGALY

*Derivation.*—Ἄκρος, extremity; μεγάλη, great.

**Definition.**—Acromegaly is a nutritional disease, characterized most conspicuously by an overgrowth of the bones and soft tissues of the face and extremities.

**Symptoms.**—In well-pronounced cases there are observed thickening of the bones of the hands and feet and enlargement of the facial features. The lower jaw is often hypertrophied. The fingers are clubbed, and the ears, lip, and tongue often increased in size. The skin may exhibit pigmentation, hypertrichosis, hyperidrosis, or sclerous thickening.

**Etiology and Pathology.**—Adult males are the most frequent subjects. The nature of the disease is not clearly understood. Pathologic changes in the pituitary body have been described which are believed by many to be the cause of the disease.

**Prognosis and Treatment.**—The disease persists for an indefinite period and is not influenced by treatment.

## CLASS VI. ATROPHIAE—ATROPHIES

### ALBINISMUS

*Derivation.*—*L., albus, white. Synonyms.*—Albinism; Congenital achromia.

**Definition.**—Albinism is a congenital affection, characterized by partial or complete absence of pigment in the skin, hair, and eyes.

**Symptoms.**—In complete albinism the skin is preternaturally white, or at times rosy-tinted, and the entire hair of the body is fine, silky, and of a whitish or yellowish color. The irides have a pinkish or pale-bluish hue, and the pupils, owing to the lack of pigment in the choroid, show the orange-red color of the fundus. Photophobia, nystagmus, and nictitation occur as a result of absence of the protective pigment and are of considerable annoyance to the patient.

Partial albinism occurs chiefly in negroes, where it manifests itself as variously sized and shaped depigmented, milky white patches. The hairs upon such patches are also white. The term "piebald" is commonly applied to such individuals. "Albinos" not infrequently exhibit physical and mental inferiority.

**Etiology.**—Unknown. Heredity seems to be a factor, inasmuch as several children in the same family are usually affected.

**Pathology.**—The skin is normal, with the exception that there is absence of pigment in the rete mucosum.

**Treatment.**—Treatment is entirely without avail.

## VITILIGO

**Derivation.**—*L., vitium*, a blemish. **Synonyms.**—Leukoderma; Acquired piebald skin.

**Definition.**—Vitiligo is an acquired pigmentary affection, characterized by variously sized and shaped whitish patches with hyperpigmented borders.

**Symptoms.**—The condition manifests itself as rounded, oval, or irregular milk-white or pinkish-white spots which tend



Fig. 115.—Vitiligo in a colored woman. Some of the white patches have later become partially restored with pigment.

slowly or rapidly to spread, at times coalescing and producing large patches. These are smooth, soft, sharply defined, and neither elevated nor depressed. The surrounding skin shows increased pigmentation, being usually brownish yellow in color. The hairs upon the affected areas may or may not turn white.

Where a vitiliginous patch extends into the hairy scalp, the hair in the area involved is prone to turn white. Exposure to the sun, especially in the summer months, leads to an increased

pigmentation around the patches, and, therefore, increases the disfigurement occasioned.

The disease progresses slowly, becoming conspicuous only after a duration of years. In rare cases the affection may



Fig. 116.—Vitiligo in a negro. Pigment lost everywhere on the body except the face and the scrotum. Duration, seven years.

involve the greater part or, indeed, the whole of the body. Vitiligo lasts, as a rule, throughout life.

The eruption may occur upon any portion of the cutaneous surface, although it is prone to elect the backs of the hands, neck, face, and the trunk. There are no subjective symptoms.

**Etiology.**—Vitiligo occurs chiefly in adult life; it is more common in women than in men. Its intimate cause is unknown, although it is believed to be due to involvement of nerve struc-

ture. Vitiligo has developed after injury to nerves. It is occasionally associated with alopecia areata, scleroderma, and hyperthyroidism. I have observed it several times in association with Graves' disease, and in two patients who presented merely a tachycardia. In one patient the vitiligo developed coincidentally with the onset of a well-pronounced exophthalmic goiter.

**Pathology.**—The skin is normal, with the exception of an unequal distribution of coloring-matter. In the white spots



Fig. 117.—Vitiligo upon the hands in a young white woman.

there is a total absence of pigment, whereas in the darkened borders the pigment is abnormally increased.

**Diagnosis.**—Vitiligo is to be distinguished from chloasma, tinea versicolor, morphea, and leprosy:

| VITILIGO.   | CHLOASMA.                                    | TINEA VERSI-COLOR.   | MORPHEA.                                  | LEPROSY.   |
|---|--|--|---|--|
| Patches are smooth and white with hyperpigmented borders. | Patches are brownish-yellow; no white spots. | Patches are brownish-yellow; furfuraceous scaling; fungus. | Thickening at first, followed by atrophy. | Patches may be whitish or yellowish, but are anesthetic. |

**Prognosis.**—In rare cases spontaneous recovery has been observed, but the affection may be said to be practically incurable.

**Treatment.**—From what has been said, it is evident that the treatment is highly unsatisfactory. Duhring advises the long-continued administration of small doses of arsenic. Locally, lotions of corrosive sublimate or acetic acid, as recommended for chloasma, may be applied to the pigmented borders with a view to dissipating the color and lessening the contrast.

Recently thyroid extract has been advised and a cure has been reported.

### ATROPHIA CUTIS

*Derivation.*—*a*, privative; *τροφή*, nutrition. *Synonyms.*—Atrophy of the skin; Atrophoderma.

**Definition.**—Atrophy of the skin is a condition characterized either by diminution in the bulk of the skin or degeneration of its component structures.

**Symptoms.**—Under the general heading of cutaneous atrophy several varieties are to be considered.

### ATROPHIA SENILIS (SENILE ATROPHY)

This term is applied to the degenerative cutaneous changes that occur in old age. The skin becomes thinned, wrinkled, and furrowed, and can be readily raised from the subjacent structures by reason of the absorption of the subcutaneous cushion of fat. Pigmentation of a yellowish or brownish color is often present. Not infrequently a dry branny scaling is observed. The hair in atrophic regions may be lost or become thinner and finer. Fatty and amyloid degenerative changes may take place in the glands of the skin or in the component fibers. Unna and others have described a change of elastic fibers into elacin and the collagenous fibers into collastin and collacin.

### ATROPHODERMA NEURITICUM (GLOSSY SKIN)

Glossy skin is a rare atrophic affection occurring usually upon the fingers, and characterized by a smooth, tense, pinkish, shining appearance, with loss of hair and incurvation of the nails. It is accompanied and preceded by considerable burning pain, and is usually due to injury or disease of a nerve. The treatment consists of protection from cold and traumatism the condition tending itself to spontaneous recovery.

**GENERAL OR DIFFUSE IDIOPATHIC ATROPHY**

This is an extremely rare disease, involving large areas of cutaneous surface, such as an entire limb. The skin is thinned, dry, wrinkled, often scaly, and exhibits a marbling of purplish or reddish-brown spots or streaks, often terminating in pigmentation. The disease is slowly progressive. It may be congenital or acquired, partial or general.

In rare cases an atrophy of the skin of one-half of the face has been observed. This condition has received the designation *hemi-atrophia facialis progressiva*.

**STRIAE ET MACULAE ATROPHICAE (ATROPHIC LINES AND SPOTS)**

This form of atrophy may be idiopathic or symptomatic. In the idiopathic variety there develop, without known cause, erythematous spots and lines, which after a variable duration terminate in atrophy. When fully developed, the atrophic areas are from one to two inches in length, and are glistening, depressed, perceptibly thinned, and of a whitish or bluish-gray color. They are usually seen about the buttocks, trochanters, pelvis, and thighs. The symptomatic variety is exemplified in the so-called *lineæ albicantes* of pregnancy. The fibers of connective tissue are separated and the papillæ effaced.

**ACRODERMATITIS CHRONICA ATROPHICANS**

This is a title given by Herxheimer and Hartman to an inflammatory, nodular, chilblain-like condition of the hands and arms terminating in atrophy. The affection runs a chronic course and is refractory to treatment.

**XERODERMA PIGMENTOSUM**

*Derivation*.—Ξηρός, dry; δέρμα, skin. *Synonyms*.—Atrophoderma pigmentosum; Angioma pigmentosum et atrophicum; Kaposi's disease.

**Definition**.—Xeroderma pigmentosum is a rare congenital disease, characterized successively by pigmentation, telangiectasis, cutaneous atrophy, and malignant papillary tumors, ending fatally.

This rare disease was described by Kaposi in 1870.

**Symptoms**.—The disease appears upon the face, neck, shoulders, and breast down to the third rib, upon the arms and dorsa of hands, and at times upon the lower extremities. The

earliest lesions consist of freckle-like yellow-brownish spots between which the skin may appear normal or show glazed, scar-like depressions. Punctate and linear telangiectatic dilatation of the cutaneous blood-vessels is likewise observed. The epidermis becomes thin, and in places smooth, whereas in other areas there are lamellæ and a parchment-like wrinkling. Later the skin may appear shrunken and bound down firmly upon the subadjacent structures. In more advanced cases eczema, fissures, ulcers, narrowing of the mouth and nostrils,



Fig. 118.—Xeroderma pigmentosum. Intense photophobia present. Two other children in family similarly affected.

and ectropion are prone to develop. Warty or other growths finally appear, which take on carcinomatous, angiomatous, or sarcomatous change. The neoplasmata occur chiefly upon the face. The disease terminates fatally in nearly all cases.

**Etiology.**—A congenital predisposition of the tissues is the only known cause. It is common for several children in the same family to be attacked. Cases are on record in which two, three, four, and even seven children of a family have suffered from the disease. Usually the disease is not present in the



parents of such children. The disease usually begins in the first or second year of life. The unfortunate victims of this disease exhibit a hypersensitivity to the action of the solar rays.

Most writers regard the irritating influence of light as a factor, but Kaposi did not accept this view.

**Prognosis.**—Nearly all cases terminate fatally; at times cancer of internal organs develops.

**Treatment.**—Local applications may be employed to ameliorate the dry and uncomfortable condition of the skin. A deep-colored calamine lotion may be used to obstruct the passage of the chemic rays of light. *x*-Ray treatment would suggest itself when early malignant change manifests itself. When advisable, the growths may be removed surgically.

#### SCLEREMA NEONATORUM

*Derivation.*—Σκληρος, hard; νέον, lately. *Synonyms.*—Scleroderma neonatorum; Sclerema of the newborn.

**Definition.**—Sclerema neonatorum is a disease occurring at or shortly after birth, characterized by induration of the skin and subcutaneous tissue and local and general circulatory disturbance.

This disease was first described by Underwood in 1784, but was by other authors subsequently confounded with œdema neonatorum.

**Symptoms.**—The disease begins usually upon the legs, thence traveling upward to the back, chest, and rest of the body; less commonly it commences upon the face and spreads downward. The skin is of a yellowish-white or waxy tint, later becoming livid. It is hard, tense, and cold, and does not pit upon pressure. The rigidity, which resembles "rigor mortis," renders motion of the joints almost impossible. Respiration is feeble, the pulse weak, and the temperature subnormal. The infant is unable to take nourishment, and death results in a few days or weeks. In very rare instances recovery may spontaneously take place.

The disease may be present at birth, or come on secondarily within ten days.

**Etiology and Pathology.**—Obscure. Occurs chiefly in prematurely born children or in those suffering from malnutrition. The immediate cause appears to be faulty circulation from pneumonia, feeble vitality, etc., or from congenital struc-

tural abnormalities. Langer believes sclerema to be due to a solidification of subcutaneous fat; Parrott ascribes it to desiccation of the tissues resulting from diarrheal depletion. Ballantyne notes the presence of a perivascular cell-infiltration. He believes the disease to be due to overgrowth of connective-tissue and atrophy of the fat-cells. He regards the disease as a trophoneurosis.

**Treatment.**—The treatment consists of: (1) Keeping up the body temperature (by means of an incubator, wrapping in wool, or hot baths); (2) maintaining nutrition (by feeding through a tube, etc.); (3) centripetal friction with warm oils.

### OEDEMA NEONATORUM

This is an extremely rare disease, and has been confounded with true sclerema neonatorum.

**Symptoms.**—The affection is encountered usually in prematurely born infants or in those of extremely feeble constitution. It begins at birth or before the third day of life. Drowsiness is one of the first symptoms, soon followed by edema, coldness, and lividity of the dependent portions of the legs, genitals, buttocks, and hands. Firm digital pressure produces pitting, a point of distinction between edema and sclerema. In fatal cases the somnolence increases, the pulse becomes feeble, the respiration shallow, and diarrhea or convulsions may set in.

**Etiology and Pathology.**—Premature birth, cardiac weakness, pulmonary atelectasis, malnutrition, etc., have been suggested as causes.

There is an effusion of yellowish serum into the subcutaneous tissue.

**Diagnosis.**—Congenital edema may usually be distinguished from sclerema by the less generalized distribution, by the pitting, lack of hardness of skin, absence of hidebound condition, and presence of edema, chiefly in dependent areas.

**Prognosis.**—Partial cases may recover, although the mortality is about 90 per cent.

**Treatment.**—The treatment is practically that of sclerema neonatorum.

**SCLERODERMA**

*Derivation.*—Σκληρός, hard; δέρμα, the skin. *Synonyms.*—Hidebound disease; Sclerema adultorum; Scleriasis; Dermatosclerosis.

**Definition.**—Scleroderma is a disease characterized by circumscribed or diffuse induration, rigidity, and stiffening of the integument, terminating in atrophy.

**Symptoms.**—The disease is rare. The skin manifestations may be preceded or accompanied by disturbance of cutaneous sensibility, such as shooting pain, prickling, tingling, itching, formication, etc., and by muscular cramps. The disease begins with the sensation of stiffening or hardening of the skin. To the feel it is tense and bound down to the subjacent structures, so that great difficulty is experienced in pinching it up. The stiffening or hardness progresses gradually, or more rarely rapidly, until marked induration of the integument results. In some cases an edematous stage may precede the induration. When the disease is typically developed, the skin is thickened, tense, hard, and immovable, acquiring in an advanced stage the feel of frozen skin, leather, or even wood. A variable amount of pigmentation is present. Usually the skin acquires a brownish tint, particularly on the arms; in other cases it is yellowish-white, suggesting the color of ivory.

The parts most affected in the order of their frequency are the upper extremities, trunk, face, head, and the lower extremities. The face has an immobile expression, and in pronounced cases exhibits a contraction of the skin over the nose and mouth, limiting the opening of the latter.

The patient is often partially invalidated by restriction of motion in the affected members.

The joints, particularly of the fingers, are, through the density and contraction of the skin, kept in a condition of ankylosis with semiflexion. The skin, tightly drawn over bony points, often undergoes ulceration. When the hands are markedly involved, the condition is called *sclerodactylia*.

The disease is chronic, although in rare cases it may run an acute course. Periods of alternating improvement and aggravation are not uncommon. The general health is, as a rule, not seriously compromised. Patients may die in the course of a few months, but, on the other hand, commonly live for twenty or more years.

**Etiology.**—Scleroderma occurs chiefly in early adult life. Lewin and Heller, who compiled and studied the records of over 500 cases, found the three decades from twenty to fifty years to be most frequent periods in men, and the decades from ten to forty years in women. The disease may occur in childhood, records of 55 cases having been published in children under fifteen years of age. The disease is distinctly more common in the



Fig. 119.—Scleroderma with sclerodactylia.

female sex, Lewin and Heller having found the rate to be 67 per cent. Exposure to cold and wet, rheumatism, nerve-shocks, menstrual disturbance, traumatism, etc., have been assigned as causes.

**Pathology.**—Lewin and Heller, from an analysis of 500 cases, contend that scleroderma is an angiotrophoneurosis, due to disturbance of either the peripheral nerves or the central nervous system. The chief changes in the skin noted in scleroderma are: an increase and condensation of the connective

tissue in the corium and subcutaneous tissue, an increase in the elastic tissue, and a diminution in the caliber of the blood-vessels. Later there is atrophy of the subcutaneous tissues.

**Diagnosis.**—The peculiar immobile, indurated, tightly adherent condition of the skin is highly characteristic of the disease. Morphea is looked upon by most writers as a circumscribed form of scleroderma.

**Prognosis.**—The prognosis in general is unfavorable. The disease, as a rule, persists throughout life; nevertheless, some cases are cured and others improved. Lewin and Heller report 16 per cent. of 203 adult cases, and 31 per cent. of 55 children under fifteen years, cured. Improvement occurred in almost a third of the cases.

**Treatment.**—The patient's nutrition should be carefully kept up by proper diet and hygiene. Electricity applied to the back of the neck and spine, massage, and hydrotherapy are often of value. Arsenic, iron, quinin, and other tonics are useful in some cases. Osler advises the use of thyroid extract. Some pronounced improvements have resulted from mercurial inunctions. Antirheumatic remedies may be used for pain.

### MORPHEA

*Derivation.*—*Μορφή*, a blotch. *Synonyms.*—Circumscribed scleroderma; Keloid of Addison.

**Definition.**—Morphea is a disease characterized by rounded, oval or linear, well-defined indurated patches of a whitish-yellow surrounded by a violaceous zone. Morphea is regarded as a circumscribed scleroderma, and is included by many writers under that disease.

**Symptoms.**—The disease is characterized by one or several circumscribed patches of a round, oval, or band-like configuration. The patches may be elevated, depressed, or upon a level with the surrounding skin. The color is at first pinkish, but later becomes dead white, ivory tinted, or yellowish; the skin surrounding is of a violaceous or lilac hue, due to dilatation of blood-vessels; the latter are often visibly enlarged, and may be seen coursing through the skin for some distance beyond the patch. The skin of the affected area is hard, shiny, indurated, and bound down; later a variable amount of atrophy and thinning of the skin is noted. Often the patch bears a strong

resemblance to an ordinary large scar. In rare instances ulceration of the patch may take place. A single area may be involved, or there may be several, in which event the course of the distribution of a nerve is apt to be followed.

The patches ordinarily vary in size from a coin to the palm of the hand. Elevated linear patches may extend for a number of inches along the arm or leg. The disease may be located upon the trunk, particularly in the region of the breasts, upon the face, or on the extremities.

Subjective symptoms are slight or absent; sometimes itch,



Fig. 120.—Morphea; the patch is paper white in color and atrophic.

ing, pricking, tingling, or pain is present. The disease may persist for many years, or the patches may spontaneously disappear.

**Etiology.**—The disease is more frequent in women than in men. The cause is to be looked for in a lesion of nerve-structure. In one of my patients a patch developed on the arm after an injury to the skin causing a large ecchymosis.

**Pathology.**—Microscopically, there is seen an exudation around the sweat- and sebaceous glands and blood-vessels, lessening the caliber of the latter. An atrophy or flattening of

the papilla, with an increase and condensation of the connective-tissue, takes place, later resulting in atrophy.

**Diagnosis.**—There should not be much difficulty in distinguishing the patches of morphea from those of vitiligo and nerve leprosy. The patches of vitiligo show no structural changes; those of nerve leprosy are anesthetic and lack the violaceous zone.

**Prognosis.**—Guarded. Patches may disappear spontaneously, but are more likely to persist indefinitely.

**Treatment.**—The treatment is practically that of scleroderma—namely, tonics, massage, and electricity.

### KRAUROSIS VULVAE

Briesky, in 1895, described a peculiar atrophic affection involving the external genitalia of females. The disease may occur at any age, and in both virgins and married women. The labia minora, the præputium clitoridis, the vestibule, and surrounding tissues are attacked. The affected parts undergo atrophic change and become shriveled and shrunken. The smaller labia and the prepuce of the clitoris may waste to such an extent as practically to disappear. The surrounding integument is often dry, glossy, thickened, and of a grayish or whitish hue. The posterior portion of the vulva is sometimes thickened, spanned, and inelastic, a condition which may interfere with coitus and childbirth. The cause is obscure. Pruritus has preceded kraurosis in some cases, and in others there has been an actual eczema present. Apart from pruritus, the only other cause suggested is vaginal discharge. In a case recently under my observation the appearances resembled leukokeratosis of the mouth.

The affection is extremely obstinate to treatment, and in severe cases excision may be necessary. Cauterization with fuming nitric acid produced excellent results in a case under my care.

### CANITIES

**Derivation.**—*L., canus, white. Synonym.*—Grayness of the hair; Whitening of the hair.

**Definition.**—Canities is an atrophic pigmentary affection of the hair, characterized by circumscribed or general graying or whitening.

**Symptoms.**—Canities is usually acquired, although in very rare cases it may be congenital. When occurring in advanced years, it is to be looked upon as a physiologic change accompanying senility (*canities senilis*). It is not rare to observe graying or whitening of the hair in comparatively young persons (*canities prematura*).

The loss of pilary pigment<sup>1</sup> may be general, may occur in circumscribed tufts, or white hairs may be interspersed among those normally colored. The last-named condition is common. The temples commonly show the first change, the vertex being next involved.

The loss of pigment is usually permanent, although cases are on record in which the color has changed with the seasons or with some condition of health.

The graying or whitening of the hair usually comes on gradually in the course of some years. In rare cases graying has occurred in a few months or weeks, and, indeed, there are authentic records of the hair "turning white in a single night."

*Ringed hair* represents a condition in which there are alternate rings or bands of white and colored hair. The affection is very rare.

**Etiology and Pathology.**—Canities is more common in men than in women. Circumscribed patches may accompany vitiligo. Varying grades of whitening may follow fever, especially scarlet and typhoid fever, psychic shocks, intense fear or anxiety, neuralgias, physical exhaustion, etc.

The graying of later years is a physiologic process due to senile innervation of the papillæ. Sudden blanching of the hair is believed to be due to the sudden presence of air-bubbles in the shaft of the hair, obscuring the pigment.

**Treatment.**—Internal remedies are of little or no value. The whitened hair may be dyed with:

R. Argent. nitrat..... gr. xv;  
 Ammon. carb..... gr. xxij;  
 Ung. adipis..... ʒj.—M.  
 For black shade. (Kaposi.)

R. Acidi pyrogall..... gr. xv;  
 Ad. cologn..... fʒss;  
 Aq. rosæ..... fʒss.—M.  
 For brown shade. (Kaposi.)



## ALOPECIA

*Derivation.*—'Αλώπηξ, a fox. *Synonyms.*—Baldness; Calvities.

**Definition.**—Alopecia is a physiologic or pathologic deficiency or loss of hair, either partial or complete. The forms of alopecia may be classified as follows:

|                          |                  |                            |  |
|--------------------------|------------------|----------------------------|--|
| I. Congenital alopecia.  |                  |                            |  |
| II. Senile alopecia.     |                  |                            |  |
| III. Premature alopecia. | (a) Idiopathic.  | Hereditary predisposition. | { Seborrhea.<br>Eczema seborrhoicum.<br>Psoriasis.<br>Erysipelas.<br>Lupus erythematosus.<br>Syphilodermata.<br>Folliculitis.<br>Tinea tonsurans.<br>Tinea favosa, etc.  |
|                          |                  | (1) Local diseases.        |  |
|                          | (b) Symptomatic. | (2) General diseases.      | { Acute. { Typhoid fever.<br>Variola.<br>Scarletina.<br>Pregnancy, etc.<br>Syphilis.<br>Leprosy.<br>Myxedema.<br>Neurasthenia.<br>Chronic. { Chronic intoxications.<br>Anemia.<br>Diabetes.<br>Cancer.<br>Uric-acid diathesis.<br>Phthisis, etc. |
|                          |                  |                            |  |

**Congenital Alopecia.**—This commonly manifests itself either as a scanty growth, a development only in certain localities, or as a retarded appearance of the hair. In rare cases there may be complete absence of the hair, due to arrested development of the follicles. In such cases hereditary predisposition is usually present, and there is apt to be, in addition, delayed or defective dentition.

**Senile Alopecia.**—As the name indicates, this form of baldness is observed in the aged. With the atrophic skin changes that accompany senility there takes place a gradual thinning of the hair, beginning upon the vertex of the scalp, the frontal and the temporal regions, and slowly leading to a more or less complete baldness of the calvarium.

**Premature Alopecia.**—This form of alopecia occurs in individuals chiefly between the ages of twenty and thirty-five. It may be either *idiopathic* or *symptomatic*.

In the *idiopathic* variety the scalp presents no abnormal condition. At first only a few hairs fall out from time to time, being replaced by a shorter or finer growth. Later these fall and are followed by still finer hairs. In this manner the entire hair of the scalp may be lost. The affection occurs in both sexes, although much less frequently in women than in men. Heredity appears to be a strong predisposing factor.

There is a growing opinion that this type of baldness is exceptional, and that most cases of premature alopecia are associated with seborrhea in some form. Of 344 private cases of premature alopecia studied by Elliot, 316 had seborrhea. Jackson found 75 per cent. of 300 cases due to seborrhea.

The *symptomatic* form results from various local and general diseases. Rapid falling of the hair (*defluvium capillorum*) follows acute diseases, such as typhoid fever, small-pox, etc. Full regeneration of the hair follows the restoration to health. Rapid and extensive loss of hair occurs with frequency in the early stages of syphilis.

**Alopecia Seborrhoica.**—Considerable difference of opinion exists as to what constitutes the seborrhoic process; the comprehension of the relation of seborrhea to baldness is thereby embarrassed. Nearly all writers are agreed that *dandruff* is a fertile cause of loss of hair, but the term *dandruff* has not the same significance for all observers. Sabouraud holds that dry pityriasis of the scalp is not a depilating affection itself, but that it is frequently associated with true seborrhea. Many clinicians speak of an *alopecia pityroides* in which there is either a seborrhea, with fatty crusts, or a pityriasis, with abundant scaling. Crocker does not restrict alopecia seborrhoica to the oily form; in it there is either "an excessive greasiness of the surface from oily seborrhea, or fine, glistening, powdery scales, or greasy scales lying closely on the scalp and requiring to be scraped off, or yellowish, fatty matter, looking like pale yellow wax."

**Etiology and Pathology.**—Dandruff is generally regarded as the most potent cause of baldness. It is a plausible and attractive theory to attribute the process to microbic invasion. Sabouraud has brought forth strong evidence to show that his microbacillus is intimately associated with, if not the cause of,

oily seborrhea. He also regards this organism as the cause of baldness. The microbacillus, according to him, enters the mouth of the hair-follicle, multiplies, and forms a thin microbic lamina which separates the hair-shaft from the follicular wall. Epithelial irritation causes the encysting of the bacilli in a plug or cocoon. Then follow increased sebaceous flow, hypertrophy of the sebaceous gland, and progressive atrophy of the hair-papillæ. Sabouraud recognizes causes which render the soil favorable, such as city life, insufficient exercise, excessive meat diet, gout, heredity, etc.

If baldness has a microbic origin, Sabouraud is certainly correct in regarding the above causes—causes which are operative in the busy life of great cities—as of vast importance. Baldness is rare or absent among savages, and is much less common in country than in city districts.

**Prognosis.**—Alopecia seborrhoica progresses gradually, unless checked by treatment, to a denudation of the vertex, leaving a fringe of hair in the temporal and occipital regions. Appropriate treatment, particularly if instituted early, will sometimes check the hair-loss and lead perhaps to some regrowth. If systemic conditions are present which render the scalp a favorable nidus, the outlook is more unfavorable.

**Treatment.**—The treatment must be directed toward the existing seborrhoic process. The measures employed relate both to general and local treatment. Out-door life, exposure of the scalp to sunlight, a restricted meat diet (Sabouraud says baldness is less common in vegetarians), the avoidance of excessive intellectual labors, etc., are to be recommended.

Such tonics as iron, strychnin, phosphorus, arsenic, and cod-liver oil may occasionally be prescribed with advantage.

Local treatment is of great importance, particularly when dandruff is present. It consists of the proper cleansing of the scalp and the stimulation of the sebaceous glands to healthy action.

The tincture of green soap makes an admirable shampoo for the removal of epithelial and sebaceous débris. This may be advantageously followed by such a hair-wash as—

|                        |                |
|------------------------|----------------|
| R. Resorcin.....       | 3ij;           |
| Acidi acetici.....     | f3j—ij;        |
| Ol. ricini.....        | f3ss—iss;      |
| Spirit. vini rect..... | q. s. ad f3vj; |
| Ol. bergamot.....      | f3j.—M.        |

When greater stimulation is desired, the following should be used:

R. Hydrarg. bichlorid. .... gr. xij;  
 Betanaphthol ..... gr. xxx;  
 Ol. ricini ..... fʒj;  
 Spirit. vini rect. .... q. s. ad fʒvj;  
 Ol. bergamot. .... ℥xxx.—M.  
 SIG.—Hair-wash.

Ointments are often of greater value than lotions:

R. Sulph. præcip. .... gr. xxx-ʒij;  
 Adipis ..... ʒj;  
 Ol. bergamot. .... ℥xxx.—M.

Sulphur is the best remedy. The ointment should be rubbed in thoroughly at night, but a small quantity of salve being employed.

Daily digital massage of the scalp is distinctly useful, as is also the vigorous use of the hair-brush to produce hyperemia of the scalp.

### ALOPECIA AREATA

*Derivation.*—'Αλωπηξ, a fox. *Synonyms.*—Alopecia circumscripta; Area Celsi.

**Definition.**—Alopecia areata is a disease of the hairy system, characterized by the more or less sudden occurrence of round or oval circumscribed bald patches, in rare cases coalescing and producing total baldness.

**Symptoms.**—The disease is usually limited to the scalp. The lesions are circumscribed and round, and vary in size from a coin to the palm of the hand. The skin is smooth, soft, of a dead-white color, and totally devoid of hair. Occasionally the patches are pinkish as a result of slight hyperemia. The follicular openings are contracted and less prominent than in the healthy scalp. To the feel the skin is thin, soft, and pliable. In the beginning the patches are level or slightly elevated, while later they are sometimes slightly depressed.

The course of the disease is extremely variable. In some cases the bald patches develop suddenly in the course of a few hours. In other cases the hair-loss is gradual, extending over a period of a few days or weeks. The areas then spread by peripheral extension until they reach a certain size, when they remain stationary.

The duration of the disease varies greatly. Recovery seldom occurs in less than a few months, while many cases last several years. The disease may occur at any period of life. In young individuals the hair usually returns sooner or later. In adults the baldness may persist and prove refractory to all treatment.

When regrowth occurs, the patch is first covered by fine, downy, whitish hairs, which are either shed or later converted into coarse and pigmented hairs. Not infrequently the hair grows in and the patient thinks he is on the road to recovery,

only to have his hopes shattered by the hair falling out again. As a rule, there are no subjective symptoms.

**Etiology.**—There are two distinct theories of the causation of alopecia areata. One school, headed by the French, insists that the disease is parasitic, and cites occurrence of epidemics in institutions as proof of this view. Epidemics have been observed chiefly in France and Germany; Bowen and Putnam describe an outbreak in an institution in this country.

On the other hand, there is irrefutable clinical



Fig. 121.—Alopecia areata; unusual irregularity of outline.

evidence of the neuropathic origin of cases of alopecia areata. Nervous shocks, such as fright, prolonged anxiety, etc., and traumatism to the scalp have been directly followed by areate loss of hair. I recently saw a boy admitted to the Polyclinic Hospital for fracture of the skull who developed alopecia areata before leaving the institution. Max Joseph has produced this disease in cats by excision of the second cervical ganglion.

It would, therefore, appear that there are two varieties of alopecia areata—the one trophoneurotic and the other parasitic. In the epidemic observed by Bowen and Putnam the patches were small and not identical with those commonly observed in

alopecia areata. Some of the English dermatologists are of the



Fig. 122.—Alopecia areata. Regrowth of whitish hairs on anterior patch.



Fig. 123.—Alopecia areata in two boys: *a*, Partial variety (hair subsequently restored);  
*b*, total alopecia (has been refractory to treatment).

opinion that alopecia areata is prone to occur in those who have at some previous period suffered from ring-worm of the scalp.

Sabouraud regards his microbacillus as the probable cause of alopecia areata.

**Pathology.**—Both Giovanni and Robinson found evidence of inflammatory disturbance chiefly in the subpapillary layer. Perivascular cell-infiltration was observed in both early and late lesions. Subsequently atrophic changes take place, with destruction of the hair-papillæ.

The characteristic hair of alopecia areata has the shape of an exclamation point. The upper part is pigmented and normal, while the lower portion is atrophied and without pigment. Sabouraud describes an ampullar swelling (*the peladic utricle*) filled with the microbacillus in the upper third of the follicle.



Fig. 124.—Alopecia areata in brothers.

**Diagnosis.**—Alopecia areata is chiefly apt to be confounded with tinea tonsurans.

#### ALOPECIA AREATA.

1. Rapid onset.
2. Patches are:
  - (a) Totally devoid of hair.
  - (b) Pale or whitish in color.
  - (c) Smooth or soft.
  - (d) Follicles contracted.
3. Absence of fungus.
4. Common in adolescence and adult life.

#### RING-WORM.

1. Slow, insidious onset.
2. Patches are:
  - (a) Covered with broken-off stumps.
  - (b) More or less reddened.
  - (c) Rough and scaly
  - (d) Follicles prominent—"goose-flesh" appearance.
3. Ring-worm fungus present.
4. Occurs almost exclusively in childhood.

The baldness of early syphilis may bear some resemblance to alopecia areata. Apart from the presence of other evidences of the disease, the patches are moth-eaten in appearance and not sharply circumscribed. The surrounding hair and scalp are lusterless and dirty, whereas in alopecia areata they are perfectly normal.

**Prognosis.**—In children recovery usually takes place. In young adults the prognosis is guardedly favorable, while in advanced adults it is unfavorable. The longer the disease has persisted, the more unfavorable is the prognosis. The duration of the disease is uncertain, and relapses are not uncommon.

**Treatment.**—The internal treatment consists of the use of such tonics as iron, quinin, strychnin, cod-liver oil, phosphorus, and arsenic. Duhring considers arsenic to be "especially serviceable."

The local treatment has for its object the stimulation and rubefaction of the scalp, with the object of increasing the blood-supply to the follicles. Many cases terminate in spontaneous recovery, and conservatism is desirable in interpreting the value of remedies employed. Among the many medicaments which have been advised are alcohol, cantharides, capsicum, the essential oils, turpentine, carbolic acid, chrysarobin, ammonia, sulphur, iodine, mercury, betanaphthol, etc.

The following lotion will be found of value:

R. Tinct. cantharidis } ..... āā f̄iss;  
 Tinct. capsici }  
 Ol. ricini ..... f̄ij;  
 Aq. cologn. .... f̄ij.—M.  
 Sig.—Apply to patches vigorously once or twice a day.

Instead of lotions, ointments, such as the following, may be employed:

R. Betanaphthol ..... ʒj;  
 Petrolat. .... ʒss;  
 Ol. bergamot. .... ℥xxx.—M.  
 Sig.—Rub in thoroughly twice a day.

During the past year I have been employing an ointment of chrysarobin, 20 grains, petrolatum, 1 ounce, with most gratifying results.



An efficient treatment consists in the swabbing of the bald areas once or twice a week with:

R. Acidi carbolici } .....aa     .—M.  
 Spirit. vini rect. }

or 50 per cent. trikresol may be employed.

The faradic current, applied with a wire brush electrode, is often useful, as is likewise high-frequency electricity. In obstinate cases blistering of the affected areas may be resorted to.

*Phototherapy.*—Many writers, including Finsen, Hyde and Montgomery, Kromayer, and others have testified to the value of actinic light rays in this disease. It is admitted that many



Fig. 125.—Total alopecia areata, showing erythematous areas of light reaction; treated with the London Hospital lamp.

cases in which light is used might have recovered spontaneously. Kromayer's results, however, in cases of extensive and even total alopecia of years' standing, indicate that light therapy is one of the most useful measures in the treatment of this disease. The iron arc or carbon arc may be employed. The ordinary London Hospital type of lamp suffices for this purpose, and permits of the exposure of an area the size of a silver dollar. The accompanying photograph Fig. 125 shows hyperemic areas resulting from thirty-minute exposures.

## FOLLICULITIS DECALVANS

Quinquaud described a form of folliculitis more particularly involving the scalp, and followed by destruction of the pilous elements, with scarring and baldness. The disease occurs in irregular patches from the size of a pea to that of a silver quarter-dollar, over which there is a complete or partial alopecia. Scattered through the patches, or occurring upon the spreading border, are papules, pustules, or merely reddish spots which represent the inflammatory process which ends in follicular destruction. The papules and pustules are usually penetrated by hairs which fall out. Small patches are often irregularly scattered throughout the scalp.

Histologically, the process is a perifolliculitis. Micrococci have been found in the lesions.

The disease is a form of cicatricial alopecia, perhaps, of coccogenous origin, and doubtless belonging in the same group with lupoid sycosis.

**Treatment.**—Quinquaud advised painting with tincture of iodine and using a bichlorid of mercury lotion. I have secured good results with ointments of tar and ammoniated mercury. The loss of hair is, of course, irremediable.

## ATROPHIA PILORUM PROPRIA

*Synonym.*—Atrophy of the hair.

**Definition.**—An idiopathic or symptomatic atrophy of the hair, characterized by diminution of size, dryness, brittleness, and tendency to splitting.

**Symptoms.**—Symptomatic atrophy of the hair occurs in seborrhea, ring-worm, phthisis, syphilis, the various fevers, etc.

The idiopathic form is exemplified in the following affections:

## FRAGILITAS CRINIUM

This condition is characterized by a splitting or longitudinal fission of long hairs into two or more fibrillæ. The splitting is most often seen upon the long hairs of the female scalp, and usually affects scattered hairs. Sometimes all the hairs of an affected region are attacked. The cleft hairs spread apart or curl up. The beard is also at times involved. Duhring has described a condition of the beard in which the cleavage affected

the intrafollicular portion of the hair, not infrequently the hair-bulb. The hair-root was split into two or four stalks; atrophy of the bulb occurred. The hair in *fragilitas crinium* is drier and more brittle than normal.

**Etiology.**—The disease is probably a nutritional disorder, dependent upon nerve disturbance. Some writers believe the use of sharp hair-pins may operate as a cause upon the feminine scalp.

**Treatment.**—Proper hygiene of the scalp and the use of stimulating lotions and bland ointments are advised. The split ends of the hair should be cut off; the beard should be daily shaved.

#### TRICHORRHEXIS NODOSA

This condition is most frequently observed in the beard and mustache. It is characterized by spindle-shaped, bulbous, translucent swellings along the hair-shaft. Rupture takes place at the points of distention, the hairs frequently breaking off and leaving brush-like stumps.



Fig. 126.—Trichorrhexis nodosa.

The fractures are nearly always transverse to the axis of the hair. The nodes present roughly a resemblance to the ova pediculi. When numerous frayed ends of are seen, the beard looks as if it had been recently singed. One hair may present several nodes. The pubic and axillary hairs may likewise be affected.

**Etiology and Pathology.**—Hodara, Essen, and Spiegler have found micro-organisms which they regard as the cause of the disease. Other competent investigators have failed to confirm these results. Future research is necessary to establish the cause.

**Treatment.**—The results of treatment are far from satisfactory. Repeated shaving has been the most efficient measure. Besnier advises plucking the hairs out. Various antiseptic lotions and ointments have been advised.

### MONILETHRIX

This is a rare affection of the hair in which the entire hair-shaft consists of alternating nodular or fusiform swellings and narrow atrophic portions. The spindle-shaped nodes are darker than the intervening portions, and thus a ringed appearance is produced. The hair is brittle and prone to break in the internodular areas, the resulting fracture having frayed or brush-like ends. The brittleness may be so pronounced as to cause most of the affected hair to break off near the scalp and thus produce bald patches looking somewhat like tinea tonsurans.

The disease is regarded as a congenital defect in the nutrition of the hair. The treatment is unsatisfactory.

### LEPOTHRIX

Lepothrix is a condition involving the hairs of the axillæ and scrotum, and characterized by the presence of an irregular sheath produced by microorganisms. The hair, either in circumscribed areas or throughout its entire length, is surrounded by concretions which give it a ragged "wet-string" appearance when held up to the light. The hair becomes brittle and breaks upon slight traction. The masses, particularly upon axillary hairs, are often red, owing to the presence of the organism producing "red sweat." Under the microscope the whole or part of the hair is seen to be ensheathed in a mass which has often the appearance of a feather; at other times, nodular concretions are attached to the hair. The condition appears to be bacterial in origin, and both bacilli and micrococci have been found.

**Treatment.**—The hair should be shaved and the parts sponged with antiseptic solutions, such as bichlorid of mercury.

### PIEDRA

Piedra is a disease of the hair occurring among the natives of Colombia, South America. The hair-shaft is the seat of a number of black, intensely hard, pin-head-sized nodules, which rattle during the process of combing the hair. Women alone are affected, as a rule, but occasionally the beard and scalp of men are involved. The concretions are due to the presence of a fungus which has been studied by Juhel-Rénoy.

### TINEA NODOSA

Tinea nodosa, so named by Morris and Cheadle, is an affection characterized by nodular incrustations occurring upon the hair of the scalp and beard. The hair is ensheathed in concretions which give the shaft an irregular appearance and cause it to become brittle. The mass is made up of mycelium and spores, rather smaller than those in tinea tonsurans.

The treatment consists of shaving and the use of antiseptics.

### PLICA POLONICA

This is a condition due to uncleanness and neglect, and resulting in the matting of the hair into inextricable strands. In *plica neuropathica*, apparently as a result of nutritional alteration of the hair, hard lumps or rope-like masses occur, the latter, at times, growing to considerable length.

### ATROPHIA UNGUIUM

*Synonyms.*—Onychatrophia; Atrophy of the nail.

**Definition.**—A congenital or acquired condition, characterized by decreased size or thickness of the nail, softening, splitting, crumbling, and discoloration.

**Symptoms.**—In congenital atrophy the nails may be absent, defective, or distorted. In acquired atrophy, which is more common, the nail may be thin, opaque, narrow, friable, furrowed, laminated, or otherwise distorted. Acquired atrophy results from wasting general diseases, syphilis, nerve injuries, etc., and from such local disorders as psoriasis and eczema. When the nail is invaded by the fungus of ring-worm or favus, it is termed *onychomycosis*.

**Etiology.**—Dystrophy of the nails and hair has been observed to occur in several generations of families; occasionally there is associated mental weakness.

**Treatment.**—The treatment varies according to the cause. Syphilis and other constitutional diseases must receive their appropriate treatment. In other cases trimming and scraping of the nails and friction with green soap, followed by protection with wax or a rubber stall, are often of value. In onychomycosis mercurial preparations are of particular efficiency.

### AINHUM

*Derivation.*—From a native term meaning “to saw.”

**Definition.**—Ainhum is a tropical endemic disease characterized by a slow, spontaneous amputation of the little toe.

**Symptomatology.**—The disease begins as a circular furrow in the digitopltantar fold of the little toe. Other toes may occasionally be attacked. There is no pain and likewise no evidence of inflammation. Very slowly, occupying a period of years, the furrow increases in depth until the digit is constricted as if by a ligature. The distal portion of the toe swells up from circulatory obstruction, and gradually undergoes dry gangrene and spontaneous amputation. This may occur without ulceration, or the fissure may be moist and discharge a foul-smelling secretion.

The course of the disease is extremely slow, the process running over five to ten years or more.

**Etiology.**—Obscure. The disease occurs chiefly in negroes in Africa, South America, and the West Indies. It is also observed in India. The affection is probably a trophoneurosis.

**Treatment.**—Early transverse incision of the constricting band may check the course of the disease. Later nothing remains save amputation.

### MORVAN'S DISEASE (SYRINGOMYELIA)

This disease belongs rather to the domain of neurology, but brief mention is here made because of certain cutaneous manifestations, which bring the affection, at times, into diagnostic conflict with leprosy.

The disease is due to structural changes in the spinal cord, with resultant sensory disturbances and trophic alterations, particularly involving the upper extremities.

The onset of the disease is insidious, with pain in one or both arms, accompanied by a loss of muscular power. Analgesia may occur early or later in the course of the disease. Later, trophic changes, particularly in the form of recurring whitlows, develop, with subsequent phalangeal necroses and mutilations. Large blebs, sometimes with hemorrhagic contents, ulcerations, muscular atrophy, glossy skin, and claw-like deformity of the hands are not infrequently observed. One or both hands may be involved in the lower extremities.



Fig. 127.—Syringomyelia and multiple neuritis, producing mutilations suggestive of leprosy.

There is preservation of the tactile sense, with loss of sensation to heat, cold, and pain. The disease may last many years.

The differential diagnosis from leprosy is considered under the head of the latter disease.

## CLASS VII. NEOPLASMATA—NEW-GROWTHS

### KELOID

*Derivation.*—*Xηλή*, a claw. *Synonyms.*—Cheloid; Keloid of Alibert.

**Definition.**—Keloid is a connective-tissue new-growth, appearing as variously sized and shaped, smooth, firm, reddish, cicatriform elevations.

**Symptoms.**—The disease usually begins as a small pea-sized nodule which, during the course of years, slowly increases in size. The shape is extremely variable: it may be round, oval, cylindric, stellate, or linear. Very commonly claw-like processes extend out from the major portion of the growth to the surrounding skin. Keloids vary in size from a pea to the palm of the hand or larger. The growth is sharply defined, firmly implanted in the skin, smooth, firm, and dense, with a shining

pinkish or reddish color. They may occur in any region, but are most common upon the trunk, especially over the sternum and the face, particularly in negroes. Pain and tenderness are occasionally experienced.

It is now believed that most all keloids are of traumatic origin, and that the so-called spontaneous keloids result from trivial and unrecognized bruises and injuries.

*Cicatricial keloids* have their origin in obvious scars, such as those resulting from vaccination, variola, syphilis, surgical incisions, burns, etc. The size and shape of the keloid are largely determined by the character of the preceding cicatrix.

**Etiology.**—All that can be said as to the cause of keloid is that it is due to a peculiar tissue tendency to the development of fibrous connective tissue. This tendency is strongly marked in the negro race who develop keloidal growths with great frequency.

**Pathology.**—Keloid is made up of dense bundles of white fibrous tissue running parallel with the axis of the tumor. These fibers are in the middle or lower strata of the corium; the papillary layer is usually preserved intact.

**Prognosis.**—Spontaneous involution occurs in rare cases. Ordinarily the growth, untreated, persists throughout life.

**Treatment.**—Surgical treatment alone is entirely unsatisfactory, excision being almost invariably followed by recurrence. Surgical ablation, preceded and followed by x-ray treatments, has given good results in many cases, and would appear at the present time to be the best treatment. The x-rays may be used alone, but must be pushed to the point of producing a dermatitis. Multiple scarification, followed by the use of a mercurial or lead plaster, has been advised.

## FIBROMA

*Derivation.*—L., *fibra*, a fiber. *Synonyms.*—*Molluscum fibrosum*; *Fibroma molluscum*; *Molluscum pendulum*.

**Definition.**—Fibroma is a connective-tissue growth situated in the corium and subcutaneous tissue, characterized by sessile or pedunculated, soft or firm, rounded, painless tumors, varying in size from a split-pea to an egg or larger.

**Symptoms.**—Fibromata occur either singly or more commonly in numbers, when they are distributed over a part of the body. In some instances



hundreds. They commonly vary in size from a pea to a cherry or even a pear. In rare cases huge pendulous growths may be present; these occasionally undergo ulceration. Fibromata have a uniformly soft consistence and are frequently pedunculated. The overlying skin may be normal, pinkish or reddish, stretched, hypertrophied, or atrophied. The tumors are painless.

**Etiology.**—Obscure. Some peculiar tissue tendency must be operative. Heredity appears to play a part in some instances.



Fig. 128.—Fibroma (front and back view of the same patient) (courtesy of Dr. Addinell Hewson).

**Pathology.**—Recent tumors are made up of gelatinous young connective tissue; old tumors, of dense, closely packed, fibrous tissue. The growths are situated in the corium and subcutaneous tissue.

**Diagnosis.**—Molluscum fibrosum is to be distinguished chiefly from lipoma and neuroma. Lipomata are lobulated and not pedunculated, and neuromata are accompanied by pain.

**Prognosis.**—The tumors tend to increase in size and number and persist throughout life.

**Treatment.**—Pedunculated tumors may be removed by means of a ligature or galvanocautery. Others, if not too numerous, may be excised with the knife.

### NEUROMA

*Derivation.*—*Νεύρον*, a nerve. *Synonym.*—Nerve tumor.

**Definition.**—Neuroma of the skin is an affection characterized by one or more pin-head- to hazel-nut-sized tubercles, made up of connective and elastic tissue and nerve-fibers, and accompanied by severe paroxysmal pain.

**Symptoms.**—The condition is exceedingly rare. The nodules are purplish or pinkish, elastic and immovable, both painful and tender on pressure. The accompanying paroxysmal pain is often excruciating. The few cases reported have all been middle-aged men.

**Pathology.**—The growths are really neurofibromata, consisting of a mixture of connective tissue and medullated and non-medullated nerve-fibers. The tumors are seated in the corium.

**Treatment.**—Excision of the nerve-trunk leading to the growths has been twice tried, resulting in one case in temporary, and in the other case in permanent amelioration.

### XANTHELASMA

*Derivation.*—*Ξανθός*, yellow, and *πλασμα*, lamina. *Synonyms.*—Xanthoma planum palpebrarum; Vitiligoidea.

Xanthelasma is a degenerative condition of the skin, characterized by circumscribed, flat or slightly raised, yellowish patches, usually affecting the eyelids.

This affection is classed in many text-books as a new growth under the title of Xanthoma Planum, but the researches of Pollitzer, of New York, clearly indicate that the pathologic process is not neoplastic, but degenerative. Pollitzer prefers the designation "xanthelasma," first proposed by Erasmus Wilson.

**Symptomatology.**—Xanthelasma occurs usually upon the eyelids as pea-sized or larger, rounded or oval, soft, smooth, flat or slightly elevated, circumscribed patches of a yellowish or "chamois-skin" color. They are commonly situated near the base of the eye. On pressure the patches cannot be distinguished from the surrounding unaltered skin. The patches

may extend in the direction of the long fibers of the orbicularis palpebrarum muscle.

Xanthelasma develops at or after middle life, and the lesions never disappear spontaneously.

**Pathology.**—According to Pollitzer, the structures of the skin of the eyelid are normal, but the greater part of the cutis is filled with the peculiar cell-like bodies called "xanthoma cells." These are due to degeneration of the muscle-fibers and the formation of a peculiar lipid substance. Groups of "xanthoma cells" are really degenerated muscle-fibers seen in cross-section. In advanced cases little or no muscle tissue is found in the affected area.

**Prognosis.**—After progressing to a certain size the lesions remain stationary for an indefinite period.

**Treatment.**—Whenever desired for cosmetic reasons, the patches may be removed by means of the knife, cautery, or electrolysis. The painting of the patches with trichloracetic acid is often followed by a fading of the discoloration and sometimes by their disappearance.

### XANTHOMA TUBEROSUM

*Derivation.*—Ξανθός, yellow.

Xanthoma tuberosum occurs upon the neck, body, or extremities as pea- to cherry-sized, rounded, hard, yellowish nodules or infiltrations. They are distinctly raised above the level of the skin. The larger patches are made up of closely set aggregations of smaller nodules. The favorite seat of the eruption is about the elbows and knees, where the lesions are usually grouped. The face remains exempt. Occasionally it is seen upon the knuckles, buttocks, palms, and soles. The mucous membrane of the mouth, pharynx, esophagus, and respiratory tract may exhibit lesions. Nodules have also been found in the liver. Indeed, hepatic disease may bear some causative relation to the disorder. The disease occurs most frequently in youth and early adult life. The eruptive elements develop with rapidity and persist many years, but in most cases ultimately disappear.

When the lesions are numerous and wide-spread, the designation *xanthoma multiplex* is employed.

Xanthoma tuberosum is an exceedingly rare disease.

Pathologically, xanthoma is a new growth made up of pro-

liferated endothelial or connective-tissue cells. Pollitzer and Wile have recently demonstrated the presence of cholestrin in the connective-tissue cells; they believe that this substance is carried through the blood stream, deposited in the skin, and then taken up by the cells.

**Treatment.**—The underlying causes, when ascertainable, should be treated. The lesions may, when desired, be removed by means of the knife, galvanocautery, or electrolysis.

### XANTHOMA DIABETICORUM

This disease is separate and distinct from the preceding varieties of xanthoma. It occurs in subjects of glycosuria, and is characterized by numerous pin-head- to pea-sized, obtusely conical papules or tubercles of a peculiar orange-red color. The apical center of the lesion is usually yellowish, with a small reddish areola. They appear upon the extensor surfaces of the extremities, upon the buttocks, loins, neck, and elsewhere. A variable amount of itching and burning may be present.

The eruption develops comparatively acutely; it may disappear spontaneously and recur at a later period. It is most common in corpulent, florid, middle-aged persons.

The lesions microscopically show more inflammatory change than in the ordinary form of xanthoma. Large xanthoma giant-cells are present.

The treatment should be directed toward the underlying glycosuria. Under proper dietetic and medicinal treatment the eruption usually disappears.

### MYOMA

*Derivation.*—*Μύον*, muscle. *Synonyms.*—Myoma cutis; Dermatomyoma; Liomyoma cutis.

**Definition.**—Myoma cutis is a rare affection, characterized by single, or more rarely multiple, smooth, pale red, pea- to bean-sized tumors, made up of smooth muscle-fibers.

**Symptoms.**—Simple myoma (liomyoma) is rare and appears as small, pea-sized, pale-red, elastic growths, occurring most frequently upon the upper extremities. About twenty cases are on record; most of them were men past middle life.

Dartoid myoma is the commoner form, and appears usually as a solitary hazel-nut- to orange-sized, sessile or pediculated tumor, occurring upon the breasts, scrotum, or labia.

**Pathology.**—The tumors consist chiefly of unstriped muscle-fibers, but may contain fibrous connective tissue (fibromyoma), vascular tissue (angiomyoma, myoma telangiectodes), or lymphatic tissue (lymphangiomyoma).

**Treatment.**—When practicable, excision may be advised.

### NAEVUS VASCULOSUS

*Synonyms.*—Nævus sanguineus; Angioma.

**Definition.**—Vascular nevi are congenital formations composed chiefly of blood-vessels, having their seats in the skin and subcutaneous tissue.



Fig. 129.—Congenital angioma.

**Symptoms.**—Nevi are either present at birth or are prone to appear during the first month or two of life. There are two varieties:

#### PORT-WINE MARK (NAEVUS FLAMMEUS; ANGIOMA SIMPLEX)

This occurs as flat patches of a deep-red or purplish color, varying in size from the palm of the hand to an entire side of the head. The surface may be smooth or studded with small, erectile, pea-sized tumors. The head and neck are the areas usually affected. Great disfigurement is occasioned by these growths.

Mild instances of *angioma simplex* are seen in infants, who present more or less circumscribed, pinkish patches about the face, head, or neck. Crying or other exertion temporarily intensifies the redness. These patches are often seen at birth, but may appear at a later period.

#### ANGIOMA CAVERNOSUM (NAEVUS TUBEROSUS)

This variety is characterized by circumscribed, elevated, erectile, pulsating, purplish tumors with a smooth, rugose, or lobulated surface. This form may occur upon the face, but is also common about the nates, pudenda, and elsewhere.

**Etiology and Pathology.**—Whether vascular nevi are present at birth or appear later, they are the result of congenital malformation.

In the flat or simple angioma there is a new-growth, involving chiefly the capillaries of the corium. In angioma cavernosum there is a hypertrophy of the blood-vessels (both arteries and veins) of the corium and of the subcutaneous tissue, with a variable amount of connective-tissue overgrowth.

**Treatment.**—Pin-head-sized nevi are best treated by destructive cauterization. For this purpose electrolysis, the thermocautery, or nitric acid applied upon a pointed wooden stick have been advised. I have found the use of Unna's microburner (a needle-pointed Paquelin cautery) to be superior to all other methods for small nevi.

For the large port-wine stains no treatment has hitherto proved entirely satisfactory. Actinic light treatment with the Finsen lamp and electrolysis have produced amelioration. Most encouraging results are at the present time being obtained from the use of liquid air and solid carbon dioxid in vascular nevi.

For circumscribed elevated angiomata Wyeth, of New York, recommends the forcible distention of the growth with hypodermic injections of boiling water under general anesthesia. These angiomata may also be treated by ligation, galvanocautery, electrolysis, or excision.

#### ANGIOMA SERPIGINOSUM

This rare affection, first described by Jonathan Hutchinson, is characterized by small groups of  
resembling "grains of Cayenne pepper"

a centimeter in diameter, and usually round or oval. The center of the patch clears up, producing a circular or circinate arrangement. Spreading takes place upon the periphery by the appearance of new puncta; these reddish points represent the summits of vascular loops. The enlargement of patches and the peripheral extension lead to the production of gyrate figuration. The disease spreads very slowly. The extremities are usually preferred. Most of the cases described were in young children; some started from nevi.

**Treatment.**—Destruction by electrolysis or the micro-Paquein cautery.

### TELANGIECTASIS

**Definition.**—Telangiectasis is a term applied to a vascular new-growth or enlargement of capillaries developed after the infantile period.

Telangiectases are *acquired* growths; nevi are *congenital*.

**Symptoms.**—Telangiectasis may be either diffuse or circumscribed; the latter is far more common. The *nævus araneus*, or spider nevus, is the form ordinarily seen. This most often appears upon the face, and consists of a pin-head- or larger sized red central elevation, with enlarged capillaries radiating therefrom. The size of the affected area varies, but it usually covers about one-half inch.

Small circumscribed angiomas simulating the spider nevus develop commonly upon the trunk of aged persons.

Dilatation of blood-vessels may occur upon scars, over malignant growths, in the vicinity of inflammatory dermatoses, after vigorous x-ray treatments, etc. Osler states that telangiectases frequently occur in persons suffering from hepatic disease.

The term *rosacea* is applied to enlargement of the blood-vessels of the face resulting from repeated flushing; it is commonly associated with acne lesions.

**Etiology.**—Telangiectasis sometimes develops as a result of a slight injury to the skin which leads to the formation of new blood-vessels. A pin-prick or insect-bite may act in the same manner. Acute and inflammatory diseases may likewise lead to telangiectases. I have seen erysipelas produce permanent vascular dilatation.

**Treatment.**—Telangiectatic vessels may readily be destroyed by electrolysis, or, preferably and less painfully, by the use of Unna's microburner (a needle Paquelin cautery).

### ANGIOKERATOMA

Angiokeratoma is a name given by Mibelli, in 1889, to a peculiar affection involving particularly the hands and feet, and characterized by telangiectatic elevations with subsequent warty overgrowths.

**Symptoms.**—The affection is prone to develop in persons who are much exposed to cold. Indeed, the early lesions are chilblains—dark-red macules, often with a central deeper colored point, which largely disappear upon pressure. The central punctum consists of a vascular capillary loop; often several telangiectatic points representing capillary varicosities are clustered in an elevated papule or nodule. The nodule is of a deep-red, violaceous, or purplish color. The overlying epidermis is thickened and horny, so that the lesions present the appearance of a wart. Pressure discloses to view the vascular dilatation, and pricking is followed by rather free bleeding. The eruption prefers the hands and feet, particularly the dorsal surfaces. Lesions may also occur upon the ears, scrotum, and elsewhere. The distribution may be one-sided or symmetric. The eruption begins in childhood; in a few instances the lesions have appeared later in life.

Pathologically, the process appears to originate in capillary enlargement with subsequent hyperkeratosis as a result of the vascular engorgement.

**Treatment.**—For the early lesions, stimulating applications, as in chilblains. The vascular warts may be destroyed with the electrolytic needle.

### LYMPHANGIOMA

*Derivation.*—'Λγγελον, vessel; L., *lymph*a, lymph.

**Symptoms.**—The disease is extremely rare. There are two varieties.

**Lymphangioma circumscriptum** (lymphangiectodes) is characterized by numerous small, closely aggregated, deep-red spots, which have either the normal tint



of the skin or are yellowish or pinkish. They vary in size from a pin-point to a hemp-seed. The lesions are usually arranged irregularly in small groups with healthy intervening skin. They run a chronic course, and often recur after removal. The chest and upper extremities are the seats of predilection. The disease, as a rule, makes its appearance in infancy or early childhood.

**Lymphangioma tuberosum multiplex** appears as numerous scattered, pea- to bean-sized, elevated, brownish-red, glistening



Fig. 130.—Fibrolymphangioma of skin of abdomen.

tubercles, occurring most frequently upon the trunk. The tubercles are somewhat painful on pressure. The disease is extremely rare.

**Pathology.** Lymphangioma shows under the microscope both dilatation of preëxisting lymph-channels and formation of new lymphatic vessels and spaces.

**Treatment.**—When desirable, extirpation by means of electrolysis or excision.

## COLLOID DEGENERATION OF THE SKIN

*Synonym.*—Colloid milium.

This affection is ordinarily regarded as very rare. In my experience it is not so infrequent as the paucity of recorded cases would indicate. The condition is usually limited to the upper part of the face, particularly the forehead. It is characterized by numerous disseminated or closely studded grayish-yellow or yellowish-white, pin-point- to pin-head-sized papules imbedded in the skin and slightly elevated above it. The elevations are flat topped, irregular, firm to the touch, and somewhat glistening. On puncture a small quantity of gelatinous fluid exudes. The condition is progressive and of slow development. It occurs chiefly in middle or advanced adult life. The condition was well marked in a patient of mine with a pronounced lupoid sycosis with bleb formation and essential shrinking of the conjunctivæ.

Pathologically, the process is a colloid degeneration of the connective tissue of the corium and the elastic fibers. The sebaceous glands are not involved.

**Diagnosis.**—The disease is to be distinguished from milium, xanthoma, hydrocystoma, and adenoma sebaceum.

**Treatment.**—Electrolysis and curetting have been successfully employed.

## ADENOMA SEBACEUM

Adenoma of the sebaceous glands may be present at birth or appear shortly afterward; the growths are prone to take on increased development around the age of puberty. The lesions are usually situated upon the face, particularly about the sides of the nose, upper lip, and chin. They consist of pin-head- to pea-sized, rounded tumors, usually with a smooth epidermal covering. The color may be of the normal skin tint, waxy, or reddish, the last named hue being often influenced by the presence of visibly enlarged capillaries. The tumors are frequently grouped about the alæ of the nose in a symmetric manner. There are usually other congenital cutaneous defects, such are nevi, comedones, fibromata, and pigment spots. The disease is more common in asylum children who are mentally deficient.

Pathologically, the essential change is a 1 sebaceous glands.

*Spiradenoma* or *adenoma of the sweat-glands* is a rarer condition. Many of the cases formerly described under this title were cases of multiple benign cystic epithelioma. *Spiradenoma* is apt to be a single growth, larger than sebaceous adenoma. Puncture may show the presence of a clear fluid.

**Treatment.**—Electrolysis in small lesions and excision in larger growths are advised.

### RHINOSCLEROMA

*Derivation.*—*ῥίς*, or *ῥίν*, the nose; *σκληρός*, hard.

**Definition.**—Rhinoscleroma is a disease affecting the skin and mucous membrane of the nose, and characterized by irregularly shaped, flattened new-growths of almost stony hardness.

**Symptoms.**—The disease was described by Hebra and Kaposi in 1870. It occurs chiefly in Galicia in Austria, southwestern Russia, and Brazil. In the United States it is extremely rare.

The growth, which begins usually in the mucous membrane of the septum of the alæ of the nose, consists of circumscribed, dense, hard, flattish nodules or raised plaques, which tend to become confluent. The overlying skin is glistening and either of normal tint or brownish red. Dilated blood-vessels at times course over the growth. The skin is firmly attached to the tumors; the epidermis is tense and sometimes fissured, when it gives issue to a viscid secretion which dries in the form of crusts.

The disease begins insidiously as a painless induration and thickening of the mucous membrane of the nasal alæ, the septum, or the upper lip. The neoplasm slowly extends, causing broadening or flattening of the nose and contraction of the nasal orifices, at times to complete occlusion. The process may involve the lips or extend along the nose to the velum palati. The pharynx, larynx, and trachea may become involved. Less commonly the disease begins in the pharyngeal vault or larynx.

The disease runs a progressive course without tendency to involution. When excised, the growth recurs. The disease, however, is local, and does not affect the general health.

**Etiology.**—The disease is most common in the poor. Both sexes are equally attacked. The age limits thus far have been from nine to forty years. Rhinoscleroma is practically an endemic disease, and is comparatively common in a few countries and extremely rare elsewhere.

**Pathology.**—Frisch found a short, thick, ovoid bacillus, which is generally regarded as the cause of the disease. Rhinoscleroma belongs to the infectious granulation neoplasms.

**Diagnosis.**—The diagnosis is usually easy; the stony induration involving the mucous membrane and skin of the nose, the progressive painless course, the absence of spontaneous ulceration or tendency to involution make a characteristic picture.

**Prognosis.**—Unfavorable. The growth usually persists throughout life. Through involvement of the throat and larynx suffocation may result.

**Treatment.**—The result of treatment has hitherto been unsatisfactory. Excision is promptly followed by recurrence. As patients live a long time unless their air-supply is cut off, efforts have been directed to prevent closure of the nostrils. Boring with the stick of caustic potash and the use of spongetents was a method employed by Kaposi. Recently remarkable results have been obtained with the x-rays: the disease has not only been arrested in its course, but improvement, amounting almost to cure, has been achieved.

#### MULTIPLE CUTANEOUS TUMORS ASSOCIATED WITH ITCHING

Three cases of this affection have been recorded—one by Hardaway, in 1880, and two by Schamberg and Hirschler, in 1905.

The eruption consists of pea- to bean-sized, elevated nodules, covered with a thickened, horny epidermis. The tumors are blackish in color (in the negro), firm to the touch, distinctly elevated, and sharply circumscribed. The eruption in one case appeared in the course of two weeks, no new lesions developing after that time. The arms and legs were chiefly affected; lesions, however, were present also on the trunk. There is no tendency to confluence of the nodules. About 170 lesions were present in each of the two cases reported. In Hardaway's case there were 60 present. Itching is a pronounced feature of the disease, being limited, as a rule, to the nodular growths. In Hardaway's case there was also itching of the skin between the tumors, the intervening integument becoming thickened, rough, and pigmented. Itching is severe and leads to scratching of the lesions, with the production of excoriations and fissures.

The features common to all the cases are—(1) The develop-

ment of tubercles and tumors in the skin, particularly of the extremities, accompanied by more or less severe itching; (2) the horny character of the epidermis overlying the growths; (3) the persistence of the tubercles and itching for many years: the duration in the three cases reported has been twenty-two years, fourteen years, and fifteen years respectively; (4) recurrence of the nodules after extirpation. All the patients were women.



Fig. 131.—Multiple tumor-like growths; lesions present upon the arms, trunk, and legs.

Pathologically, the sequence of changes appears to be as follows: dilatation of the cutaneous blood-vessels; cell-infiltration, chiefly in sharply circumscribed masses; proliferation of the fixed connective-tissue elements; formation of new collagenous fibers. In the largest, and presumably the oldest, tumors, there is more pronounced vascular dilatation, and, as a result thereof, an enormous overgrowth of the horny layer of the epidermis, a condition much like that seen in angiokeratoma. A feature of more than passing interest is the great abundance of mast-cells present.

The cause of the affection is unknown and treatment is without much avail.

### LUPUS ERYTHEMATOSUS

*Derivation.*—*L.*, *lupus*, a wolf. *Synonyms.*—Lupus erythematodes; Seborrhœa congestiva; Lupus non-exedens; Ulerythema centrifugum.

**Definition.**—Lupus erythematosus is a disease characterized by well-defined reddish patches covered with yellowish or grayish adherent scales and tending to atrophy.

**Symptoms.**—The disease occurs in several forms with quite marked clinical differences.

There are three chief varieties: (1) Discoid; (2) disseminated; (3) telangiectatic.

**Discoid Variety (Lupus Erythematosus Discoidea).**—This is the variety most frequently encountered. It exhibits a predilection for the face, particularly the nose, cheeks, and ears, and is usually symmetric or nearly so. The scalp may also be attacked, producing circumscribed loss of hair. More rarely the arms, hands, and other portions of the body are affected.



Fig. 132.—Lupus erythematosus; characteristic adherent crusting.

The disease appears first as small, pea-sized, isolated or grouped, reddish spots which have a grayish or yellowish, tightly adherent scale or crust. When this is removed, it shows upon its nether surface small, spike-like projections which represent sebaceous casts of the follicular ducts. This feature is most pronounced in patches upon the nose. The patches slowly increase in size by peripheral extension, several neighboring lesions commonly coalescing and producing larger patches. The border of the patch is sharply defined and elevated above

the level of the skin. Central involution commonly proceeds with peripheral spreading, the center undergoing partial resorption and flattening or sinking in. Complete involution may take place, in which event the center exhibits a thin, whitish, atrophic, or cicatricial appearance. Or if the resorption be not complete, the center is somewhat reddened and still scaly. The border is red or violaceous, and studded with patulous and enlarged sebaceous orifices or horny plugs.

The patches run an extremely slow course, covering months or years. They may disappear spontaneously, with or with-



Fig. 133.—Lupus erythematosus of several years' duration.

out atrophic scarring; or they may persist, gradually increasing in size until large areas are involved. Occasionally patches on the nose and cheek coalesce, producing the so-called "butterfly" appearance, the body represented by the nose, and the cheek patches, the wings. The union of patches may also lead to gyrate figurations.

**Disseminated Variety (Lupus Disseminatus of Hebra).—**This is, as a rule, a more acute form, and is much less common than the discoid variety. It begins usually upon the face, in much the same manner as the discoid form, *i. e.*, with the formation of small reddish patches, but the latter are more

numerous and are prone to develop upon the extremities and elsewhere. They are ordinarily erythematous and superficially scaly, but may at times resemble the lesions of erythema multiforme, urticaria, syphilis, etc. The eruption may be extremely acute and involve large surfaces, in some cases becoming almost universal.

In other cases serious succeeding crops may follow a comparatively mild initial outbreak. From a score to a hundred or more lesions may be present. In rare cases the subjective



Fig. 134.—Lupus erythematosus in a colored woman; whitish area shows loss of pigment.

symptoms may be severe, and vesiculation or pustulation may occur. Acute and wide-spread cases may be accompanied by intermittent fever, headache, joint and bone pains, diarrhea, and may terminate fatally. Kaposi has described cases complicated by persistent erysipelas-like swelling of the face, with high fever and great mortality.

**Telangiectatic Variety.**—In this form there are patches of pin-head, pea, finger-nail, or much larger size, which appear upon various portions of the face. They are of a pin'



deep-red tint, and often show no change in the skin save the appearance of fine enlarged capillaries. The color disappears under digital pressure. Scaling and patulous glandular orifices are absent, although there may be some thickening of the skin and elevation of the border. Upon involution of the patches some atrophic scarring may be visible.

The *subjective symptoms* in lupus erythematosus are, as a rule, mild or absent. Itching is seldom complained of.

**Etiology.**—The disease is much more common in females than in males, the former comprising two-thirds of the cases. Any age may be attacked, but the disease begins usually in the third decade of life. It is rare in childhood, although Kaposi has described a case in a child of three. I have observed and recorded the disease in a four-year-old girl. Many dermatologists regard the disease as due to the toxins of the tubercle bacillus—therefore, a so-called toxi-tuberculid. Both Boeck and Roth claim to have found recent or remote tuberculous manifestations in over 50 per cent. of their cases. It is not, however, generally concurred in that lupus erythematosus is essentially and invariably a tuberculous affection. The evidence for this assumption is stronger in the disseminated variety. Crocker regards a feeble circulation, prolonged exposure to great heat or cold, and superficial inflammations, such as follow erysipelas or scarlet fever, as favoring factors. Disorders of the sebaceous glands not infrequently precede the development of lupus erythematosus.

**Pathology.**—Considerable difference of opinion exists as to the characteristic histopathologic changes in the skin. The disease is variously regarded as a chronic inflammatory dermatosis, as a local infective granuloma, and as a tuberculotoxic process. There is a pronounced infiltration of embryonic cells in the upper half or third of the corium, proliferation of the fixed connective-tissue cells, hypertrophy of the sebaceous glands, followed by degeneration and atrophy and degenerative changes in the collagen and elastin. Fordyce and Holder believe the process to originate in embolic or thrombotic obstruction of capillaries. Schoonheid claims that the rete is first affected, and that this is followed by a perivascular cell-infiltration around the subepithelial blood-vessels. In contradistinction from lupus vulgaris there are no circumscribed cell-nests and no giant-cells.

**Diagnosis.**—Lupus erythematosus may be confounded

with lupus vulgaris, eczema, psoriasis, seborrhoic dermatitis, rosacea, etc. The differentiation from lupus vulgaris is as follows:

## LUPUS ERYTHEMATOSUS.

1. As a rule, develops in adult life.
2. Disease is usually superficial.
3. The lesions are well-defined scaly patches.
4. Sebaceous ducts patulous and often plugged.
5. Ulceration never occurs.
6. Scarring smooth and fine.

## LUPUS VULGARIS.

1. Develops in childhood or youth.
2. Disease is deep seated.
3. The lesions are discrete papules and tubercles.
4. Sebaceous system not involved.
5. Ulceration with scarring commonly present.
6. Scarring irregular and conspicuous.

*Eczema* does not produce sharply defined erythematous patches lasting long periods of times; furthermore, tightly adherent scaling with sebaceous plugs and comedones are absent. *Eczema* causes much greater itching and does not scar. *Psoriasis*, *seborrhoic dermatitis*, and *rosacea* may be likewise excluded by attention to the foregoing points.

**Prognosis.**—The prognosis is invariably guarded. Its capricious course renders spontaneous disappearance and relapses frequent possibilities. Many cases are extremely obstinate; ultimately, however, cure may take place. The tendency to scarring should be borne in mind in forecasting the result.

**Treatment.**—No known drug has any constant influence upon the disease, although such remedies as iodine, arsenic, cod-liver oil, etc., are occasionally of value. Quinine, in 10- to 15-grain doses daily, has been found of distinct service in some cases. Crocker advises the use of salicin, 15 to 20 grains three times a day.

The *local* treatment consists of the use of sedative or stimulating applications, caustics, or surgical manipulation, according to the nature of the case.

There are two distinct types of cases which require entirely different treatment. The superficial, very red patches with dilated blood-vessels must be treated with mild measures, whereas the infiltrated patches with horny crusts and sebaceous plugs cannot be successfully treated save by stimulating and even escharotic agents.

Inasmuch as

of cases get spontaneously better remedies should always

be given a fair trial before proceeding to the use of caustics or other destructive measures. In cases attended by a considerable degree of inflammation, mild astringent applications should be used. The following is often of value:

R. Zinci sulphat. } ..... āā gr. xl;  
 Potass. sulphid. }  
 Glycerini ..... f3j;  
 Spirit. vini rect ..... f3vj;  
 Aq. rosæ ..... q. s. ad f3vj.—M.  
 Sig.—Apply three or four times a day.

A lotion containing 2 per cent. of resorcinol and boric acid with zinc oxid and calamin may also be used.

Many cases do well under stimulating applications. An admirable method is to rub into the part vigorously every day or every other day the tincture of green soap. This may be followed by the use of a soothing ointment. The above treatment is applicable to cases with horny adherent crusts.

The more thickened the patches, the more vigorously are they to be treated. A 25 per cent. salicylic-acid plaster often acts admirably. In obstinate infiltrated patches a 20 to 50 per cent. solution of caustic potash may be applied for a few minutes and then washed off with vinegar. The surroundings must be carefully protected. A soothing ointment should then be applied.

Some cases do well under an ointment of sulphur, one to two drams to the ounce. Preparations of tar are also advised. The following combination makes a useful formula:

R. Sulph. præcip. .... 3j;  
 Olei cadini ..... f3j;  
 Lanolini }  
 Vaselini } ..... āā 3iv;  
 Ol. bergamot. .... ℥xl.—M.  
 Sig.—Apply once or twice a day.

Collodion is advised by Crocker to effect pressure upon the blood-vessels. Payne advises a 3 to 6 per cent. salicylic-acid collodion, and Unna, a 10 per cent. resorcinol collodion which acts most vigorously and must be used with care. Ethyl chlorid spray acts well at times, as does a mentholated alcohol frequently applied. Stronger applications, such as pure carbolic acid, trichloroacetic acid, etc., may be used in rebellious cases.

Electrolysis has been used with good results. I have found the microburner of Unna (needle Paquelin cautery) of distinct

value, particularly in small patches of the telangiectatic variety. Linear scarification, as advised by Squire, may be resorted to when other measures fail.

*Solidified carbon dioxid*, applied with moderate pressure for ten to thirty seconds, has given splendid results in some cases. Carbon dioxid, however, is not of value in all cases. Where it fails, it will not, if properly employed, do any harm.

*Phototherapy*.—The use of actinic rays of light applied by means of the Finsen lamp or the London Hospital type of lamp is often of distinct value. This treatment is more especially useful in the vascular forms of the disease.

*Radiotherapy*.—The *x*-rays may at times be employed with benefit in the thickened forms of lupus erythematosus. In the vascular variety the treatment is rarely of value. In all cases the *x*-rays must be used with the greatest care and circumspection, if used at all, for cases unsuccessfully treated by the *x*-rays are thereafter much more difficult to cure by other means.

### TUBERCULOSIS CUTIS

Tuberculosis cutis is due to infection of the skin with the tubercle bacillus. It may be primary or may occur secondarily to involvement of some other organ.

Five principal varieties of tuberculosis of the skin are recognized: (1) Lupus vulgaris; (2) tuberculosis verrucosa cutis; (3) tuberculosis cutis orificialis; (4) scrofuloderma; (5) miliary tuberculosis of the skin.

### LUPUS VULGARIS

*Derivation*.—*L.*, *lupus*, a wolf. *Synonyms*.—Lupus exedens; Lupus exulcerans; Noli me tangere; Tuberculosis of the skin (one form).

**Definition**.—Lupus vulgaris is a tuberculous cellular new-growth, characterized by reddish or brownish patches consisting of papules, nodules, and flat infiltrations, usually terminating in ulceration and scarring.

**Symptoms**.—The disease commonly begins as one or several pin-head- to lentil-seed-sized grouped or disseminated flat papules. The color is dull red, with often an admixture of brown or yellow. The papules are softer than the surrounding skin, and can be readily indented or penetrated by pressure with a blunt or sharp instrument. Their soft consistence and brownish-red color have caused Hutchinson to liken their appearance to "apple jelly."



Fig. 135.—Lupus vulgaris of some years' duration.

These papules develop gradually into pea-sized or larger tubercles or nodules, which ultimately become aggregated in



Fig. 136 —Lupus vulgaris in a woman seventy years of age; duration, for partial destruction of tip of nose.

variously sized and shaped patches, covered with imperfectly formed epidermis. After a variable duration the nodules coalesce, chiefly by individual extension, forming dull-red, raised, soft patches.

Lupus nodules are often flat and imbedded in the skin. At other times they are raised above the level of the surrounding integument. But a single tubercle may be present, although usually a number of scattered grouped or coalescent nodules are seen. Central involution or ulceration of patches may occur, leaving a scarred area, surrounded by an elevated, dark-red, lupus border, spreading in a gyrate or serpiginous manner. Small lupus nodules are prone to spring up in the cicatricial tissue.

One of the distinguishing features of lupus vulgaris is the remarkable indolence and chronicity of the lesions. Nodules may remain for months or years without increasing in size or undergoing retrogressive change. In many cases, however, a slow extension takes place by peripheral spreading or the appearance of nodules. Ultimately



Fig. 137.—Lupus vulgaris of extensive development; areas on nose, ears, trunk, and thighs (courtesy of Dr. M. B. Hartzell).

retrogressive or degenerative change takes place. The nodules may be resorbed, leaving a smooth or scaly scarred surface (*lupus exfoliatus*), or, as is more commonly the case, break down and ulcerate (*lupus exedens*; *lupus exulcerans*).

Lupus ulcers are irregular in outline, comparatively shallow, have but a scant secretion, and tend readily to bleed. The resultant crusts are often of a brownish color from the sanguineous contents. At times exuberant granulations spring up upon the border of the ulcer (*lupus hypertrophicus*), or



Fig. 138.—Serpiginous lupus vulgaris of seven years' duration. Lupus nodules on border.

there may develop papillomatous outgrowths (*lupus papillomatosus*).

The most frequent seat of lupus is the face, particularly the nose, cheeks, and ears. The disease may be limited in area or may involve almost the entire face. When the tip and ala of the nose are attacked, the parts ultimately become shrunken from absorption or ulceration, and marked cicatricial contraction of the nostrils occurs. The same process about the eyelids may lead to a pronounced ectropion. The ears are commonly deformed and contracted. In the worst cases the pal-

pebral, nasal, and oral orifices are narrowed to small apertures or slits, and the features are disfigured almost beyond human semblance. The mucous membranes, cartilage, and bone may in the end undergo destruction.

**Etiology.**—Lupus vulgaris is essentially a disease originating in childhood and youth; over one-half of the cases develop before the age of fifteen. It is distinctly uncommon to observe it to begin after the age of thirty. Females are considerably more prone to it than males. It is now well recognized that lupus vulgaris is a tuberculosis of the skin, due, therefore, to the invasion of the tubercle bacillus. Lupus patients react almost uniformly to the influence of tuberculin. It is common to note tuberculous disease in other members of the family. Many

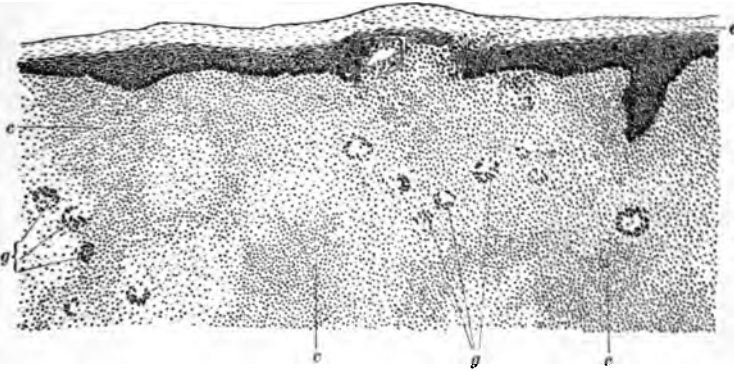


Fig. 139.—Lupus vulgaris section (low power): *e*, Epidermis; *c*, *c*, *c*, corium, infiltrated with the tuberculous neoplasm; *g*, *g*, Langerhans' giant-cells (courtesy of Dr. J. T. Bowen).

patients have tuberculous foci elsewhere. All causes (debility, bad hygiene, filth, etc.) which lower the resisting power of the individual thereby render the cutaneous tissues a more favorable soil. Direct inoculation from without appears to be the mode of infection.

**Pathology.**—Microscopic examination may show, deep in the corium, either sharply circumscribed nests of mononuclear leukocytes surrounded by a collagenous capsule, or an infiltration of these cells, evenly diffused throughout the lymph-channels and surrounding tissues. Giant-cells with peripherally arranged nuclei are constantly observed. There are also plasma-cells, mast-cells, and large multinuclear cells present. T



bacilli are few, and discoverable only by laborious examination of many sections. They may be found between the cells, but are usually discovered in the giant-cells. Inoculation of lupus tissue into a guinea-pig will commonly produce a generalized tuberculosis.

**Diagnosis.**—The diseases most apt to be confounded with lupus vulgaris are the tubercular syphilid, lupus erythematosus, epithelioma, and leprosy. The first-named disease may often closely simulate lupus; the differentiation is as follows:

| LUPUS VULGARIS.   | TUBERCULAR SYPHILID.  |
|---|---|
| 1. Develops usually before the age of puberty.  | 1. Develops after the age of puberty.   |
| 2. Course extremely slow.   | 2. Course rapid.  |
| 3. History, perhaps, of tuberculosis in family.   | 3. History of infection.  |
| 4. Concomitant signs of tuberculous disease.  | 4. Concomitant signs of syphilis.   |
| 5. Nodules soft.  | 5. Nodules firm.  |
| 6. Ulcers are comparatively superficial, with irregular undermined edges; discharge slight; crusts scant and reddish brown. | 6. Ulcers are deep, with sharp-cut edges; discharge copious; crusts bulky and greenish. |
| 7. Scars yellowish, shrunken, and hard.   | 7. Scars whitish, soft, and smooth.   |
| 8. Refractory to all but destructive measures.  | 8. Rapid healing under the iodids and mercury.  |

*Epithelioma* begins much later in life, often develops upon warts, moles, etc., and is characterized by a central ulceration with a hard, raised, pearly, vascular border. In *leprosy* the eruption is more generalized and abundant and develops later in life. When macular patches are present, they are anesthetic.

**Prognosis.**—The disease runs an eminently chronic course. The prognosis depends upon the age of the patient and the form, extent, and duration of the disease. Occurring in small, circumscribed patches, the prognosis is favorable. Some cases are practically incurable. The possibility of generalized tuberculosis resulting should be borne in mind.

**Treatment.**—General hygienic measures, such as nutritious diet, fresh air, exercise, etc., should receive attention. In many cases the administration of such remedies as cod-liver oil, iodid of iron, etc., is indicated, although no direct curative influence is to be expected from their use. Tuberculin has been used in some cases with encouraging results. Its curative

value, however, is at the present time not definitely determined.

*Local treatment* has for its object the destruction of the lupus tissue, with as little resultant scarring as possible. In some cases of an inflammatory type mild measures may at first be indicated.

In hyperemic cases the condition is sometimes improved by the continued application of calamin lotion. Mercurial plaster occasionally exerts a beneficial influence on the disease. A salicylic-acid (20 per cent.), creasote (40 per cent.), or resorcinol plaster may be used with good results. Most cases, however, require more heroic treatment.

The *solid stick of nitrate of silver* is useful in the treatment of small discrete lesions. It is bored into the tissue until the nodule is destroyed. Every few days new lesions are attacked.

*Pyrogallic acid* is a slow but practically painless caustic. It may be used in a 25 per cent. ointment or as a paint.

Brocq advises the following:

R. Acidi pyrogallici )  
 Acidi salicylici ) ..... āā gr. i.  
 Collodii ..... f3j.—M.  
 Sig.—Paint on the part every day until a slough is produced.

Personally, I prefer to use pyrogallol in ointment form:

R. Acidi pyrogallici ..... 3ij;  
 Cerati resinæ ..... q. s. ad 3j.—M.  
 Sig.—Apply on piece of muslin.

After several days' continuous application, changed daily, the necrotic tissue is removed by hot fomentations and the pyrogallic-acid treatment resumed.

*Arsenious acid* is a rapid caustic, exerting a selective action upon diseased tissue. It is, however, very painful, and can be used only over small areas on account of the danger of absorption.

R. Acidi arseniosi ..... gr. xx;  
 Pulv. acaciæ ..... —xx;  
 Aquæ .....  
 Ft. past.  
 Sig.—Spread on lint and  
 tice until slough comes away.

*Chlorid of zinc* is an efficient caustic, not so painful as arsenic. It does not, however, select diseased tissue.

R. Zinci chloridi.....  $\frac{3}{4}$ xxvj;  
 Pulv. opii.....  $\frac{3}{4}$ iss;  
 Acidi hydrochlorici..... f $\frac{3}{4}$ vj;  
 Aq. bullientis..... f $\frac{3}{4}$ xx.—M.

Sig.—To one ounce of the solution add two drams of wheaten flour. Spread the paste upon lint and apply for twenty-four hours.—(*Middlesex Hospital formula.*)

*Curetting* is an extremely valuable procedure. It is often supplemented by the use of a caustic, such as a pyrogallic-acid ointment, or the application of the Paquelin cautery.

*Scarification* is a most useful measure, particularly in diffuse superficial patches. Numerous parallel incisions, crossed at right angles by others, are made through the skin by means of a sharp scalpel or scarifier. This is often advantageously followed by the application of an iodoform ointment or a bichlorid of mercury lotion.

The *galvanocautery* and the *Paquelin cautery* find a distinct field of usefulness in the treatment of forms of the disease characterized by discrete nodules.

*Actinotherapy and Radiotherapy.*—The employment of *concentrated sunlight and electric light* with an apparatus specially devised by Pinsen has given most excellent results, both as regards permanence of cure and subsequent cosmetic appearance. The treatment is long and tedious, and requires an expensive outfit, but gives the best results in lupus of any treatment thus far advocated. Within recent years encouraging results in the treatment of selected cases of lupus have been reported from the use of the *x-rays*; one advantage of the latter treatment is that a large portion or the entire diseased area may be exposed to the rays at one time, thus greatly shortening the period of treatment. (See chapter on Radiotherapy and Actinotherapy.)

*Surgical ablation* of patches of lupus has been extensively practised by Lang; the excision is followed by skin-grafting, and the results are said to be most satisfactory.

#### TUBERCULOSIS VERRUCOSA CUTIS

There are several clinical varieties of warty tuberculosis of the skin. The condition is due to the invasion of the tubercle bacillus.

**Tuberculosis verrucosa cutis** is characterized by one or several circumscribed patches of variable size and shape, occurring particularly upon the arms or legs. They are of a brownish or violaceous color, and usually have a warty or vegetating surface; sometimes small pustules are present. The condition occurs in butchers, dissecting-room attendants, and other persons handling dead or living bodies. It may be confounded with blastomycetic dermatitis.

**Verruca Necrogenia (Post-mortem Wart; Anatomic Tubercle).**—This is a tuberculous disease, due to local inoculation, and characterized by the development of one or several verrucous nodules.

**Symptoms.**—The affection begins at the site of an abrasion as an inflammatory vesicopustule; this slowly increases in size and is attended by burning and itching. The fully developed lesion is usually bean-sized, flattened, and covered with a horny or warty surface or with crusts. The fingers and knuckles are the favorite seats.

**Etiology.**—The affection occurs in physicians, dissecting-room attendants, and those coming in contact with the cadaver.

**Pathology.**—The disease is produced by inoculation with the tubercle bacillus. This organism may or may not be found in the tissues.

**Prognosis.**—Unless proper treatment is instituted, the disease is progressive. General tuberculous infection is of rare occurrence.



Fig. 140.—Verrucose tuberculosis in a young boy.



Fig. 141.—Tuberculosis verrucosa cutis: type commonly resulting from inoculation.

**Treatment.**—The treatment consists of destruction of the diseased tissues by means of the curet, knife, or such caustics



Fig. 142.—Warty tuberculosis beginning in a wound on the sole, produced by walking barefooted. Subsequent involvement of femoral glands; tubercle bacilli found in purulent discharge from gland.

as nitric acid, caustic potash, etc. The preliminary application of a 25 per cent. salicylic-acid plaster facilitates the treatment.

## TUBERCULOSIS CUTIS ORIFICIALIS

This form of tuberculosis of the skin is characterized by indolent, discrete, round or oval, shallow, granulating ulcers, often covered with thin crusts, occurring in the neighborhood of the orifices of the body (anus, vulva, nose, and mouth). The ulcers are painless, exhibit no tendency to heal, and pursue a slow, progressive course. There is nearly always visceral tuberculosis present, and frequently there are lesions of the adjacent mucous tracts, which show yellowish; miliary papules. The condition is very rare. Chiari observed but 5 cases among 3000 to 4000 autopsies on tuberculous subjects.

## SCROFULODERMA

*Derivation.*—L., *scrofa*, a sow.

**Definition.**—Scrofuloderma is a tuberculous affection of the skin and subcutaneous tissues, originating in the lymph-glands and terminating in ulceration of the integument.

**Symptoms.**—The affection begins in one or more lymph-glands, which become swollen, constituting variously sized tumors unaccompanied by redness or pain. Later these glands undergo caseation and suppuration, the overlying skin becoming tense, violaceous, and riddled with sinuses which permit the escape of a caseous, sanious pus.

The scrofulous ulcer is usually almond shaped, with thin, violaceous, undermined edges, and an uneven base made up of pale, flabby granulations.

The course is slowly progressive. When cicatrization occurs, the scars are seen to be irregular, knotty, and hard.

The most common seat of the disease is about the face and neck.

Conjunctivitis, keratitis, blepharitis, rhinorrhea, otorrhea, bone trouble, etc., are at times associated with the lymphatic and cutaneous involvement.

**Etiology.**—Scrofuloderma is a form of cutaneous tuberculosis and is due to the tubercle bacillus.

**Diagnosis.**—From lupus vulgaris scrofuloderma may be distinguished by the absence of outlying tubercles and patches. From syphilis it may be distinguished by the peculiar character of the scrofulous ulcer, the history, the slow course, and presence of other signs of struma.

**Treatment.**—The constitutional treatment consists of good



Fig. 143.—Scrofuloderm (tuberculosis) having its origin in a lymphatic gland.

food, proper hygiene, and the use of such tonics as cod-liver oil and iodid of iron.



Fig. 144.—Scrofuloderm (tuberculosis) of face and hands. No lesions elsewhere.

The local treatment has for its object the destruction of the ulcers. This may be accomplished by the use of the curet, knife, or caustics, or preferably by the use of the x-rays.

#### MILIARY TUBERCULOSIS OF THE SKIN

An acute miliary tuberculosis of the skin has been observed chiefly in children. It usually accompanies a general miliary tuberculosis. The condition may follow the exanthematic fevers. The lesions consist of small, brownish-red, conical papules, suggesting acne lesions. They may later break down and form sharply cut ulcers, upon the periphery and base of which miliary tubercles may be seen.

A *dermatitis tuberculosa acuta* has been described by Heller and Gaucher, in which a variety of lesions, macules, papules, pustules, vesicles, or blebs may develop, terminating in ulcers and associated with glandular caseation.

#### DERMATOSES ASSUMED TO BE RELATED TO TUBERCULOSIS

There are a number of dermatoses described by various authors under diverse names, some of which appear to be related to tuberculosis. Darier designated these "tuberculides," and Hallopeau, believing them to be caused by the toxins of the tubercle bacillus, called them "toxituberculids." Considerable difference of opinion exists as to the identity of these variously titled eruptions. Several of the more common affections will be briefly described.

#### ACNITIS (Barthélemy)

Acnitis is identical with Crocker's *acne agminata*, but is distinct from folliclis. Tilbury Fox described three cases of this disease in 1878 as a form of lupus. The eruption is usually confined to the face, but may occur later on the limbs. The lesions consist of pin-point- to pin-head-sized, firm, brownish-red papules and nodules, tending at times to form pustules. A distinguishing feature is the tendency to grouping about the chin, cheeks, or temples. The nodules are lupoid in appearance. Occasionally several lesions coalesce into a nodular patch. The eruption is indolent and persistent, and not





Fig. 145.—Acnitis: the eruption disappeared spontaneously after a lapse of months, leaving pitted scars.

affected by the usual treatment for acne. After involution, small pigmented scars are often left. In a case under the author's care guinea-pig inoculations and the tuberculin test were negative.

#### FOLLICLIS (Barthélemy)

The eruption in folliclis is more apt to attack the hands, forearms, feet, and legs, although the face may also be affected.

The lesions begin as red spots, but soon inflammatory reddish papules are formed which tend to vesiculate at the summit and become pustular. A dark-colored, tightly adherent horny center is often observed, and is quite characteristic. There is no tendency to grouping. The lesions may run their course in a few weeks, but new crops appear, and the affection may last for years, with seasonal interruptions. The affection occurs, as a rule, in tuberculous subjects or in the offspring of such persons. I have seen several series of cases in which three or four children in a family simultaneously presented the eruption

upon the hands and face. In these patients the eruption disappeared in the summer months and returned as the cold season approached.



Fig. 146.—Tuberculid (folliculitis) or small papular scrofuloderm. Present in characteristic manner upon the hands and also on the face. Lesions present in this patient only in the winter months. Followed by scarring.

This affection appears to be closely related to, if not identical with, the "*small pustular scrofuloderm*" described by Duhring.

### BLASTOMYCOSIS CUTIS

*Synonyms.*—Dermatitis blastomycotica; Blastomycetic dermatitis.

**Definition.**—Blastomycosis is a chronic infectious, inflammatory disorder, due to the invasion of blastomycetes (pathogenic yeast fungus), and characterized by sharply

elevated, warty or papillomatous patches, the borders of which are studded with minute abscesses which exude a puriform secretion.

Blastomycetic dermatitis was first described by Gilchrist and Stokes in 1897. Since that time about 50 cases have been observed. The disease is common in Chicago, where it has been thoroughly studied by Hyde, Montgomery, and others.

**Symptoms.**—The disease begins as a papule or papulopustule which becomes crust-covered and, enlarging, acquires a warty surface. The eruption spreads by peripheral extension or by the appearance of new lesions. When a coin or larger-sized patch is developed, the appearances are as follows: The patch is distinctly elevated, with a sharply margined border; it is covered with papillary excrescences which give it a warty or cauliflower appearance. Young patches are comparatively dry; older patches have a soft, pus-infiltrated base, frequently covered with crusts. The granulations are often vascular and readily disposed to bleed. The border exhibits a characteristic appearance: it is dark red or violaceous, and slopes from the elevated plaque to the healthy skin. It is studded with minute abscesses, sometimes visible only with the aid of a magnifying lens. Other portions of the patch may also exhibit miliary abscesses. When punctured with a fine needle, a glairy muco-pus is evacuated in which the yeast organism is found. Parts of larger patches may heal and become covered with an irregular, pinkish, shining scar. Miliary abscesses may develop in the cicatricial tissue. The face, hands, and arms are the areas most frequently attacked, but the disease may occur upon any portion of the body. The disease is indolent in its course, a patch one inch in diameter usually requiring months to develop.

A number of fatal cases of systemic blastomycosis have been reported. Pyemia, with subcutaneous abscesses or pulmonary involvement, may develop.

**Etiology.**—The disease is due to local infection with a pathogenic yeast fungus. A cutaneous wound favors the invasion of the organism. One-half of the patients have been over forty years of age. The disease appears to be much more common in the United States than abroad.

**Pathology.**—There is an enormous downgrowth of the rete projections, which assume various irregular shapes. In these

are found the characteristic miliary abscesses filled with polymorphonuclear leukocytes, occasionally giant-cells and yeast-organisms. The blastomyces are also found between epithelial cells and in the corium. They are round, oval, or irregular, with a double contoured capsule and granular protoplasm, often containing a vacuole. Unequal pairs of organisms or budding forms may be seen. Cultures on agar or glucose-agar produce a white, cotton-like growth.

**Diagnosis.**—The disease is principally to be differentiated from tuberculosis verrucosa cutis, which it may strongly resemble. Often microscopic and cultural examinations are necessary to establish the diagnosis. A border showing miliary abscesses is strongly suggestive of blastomycosis; pus from these macerated in 20 to 30 per cent. potassium hydroxid solution commonly shows budding organisms in this disease.

**Prognosis.**—Favorable unless septicemia or other systemic infection has taken place.

**Treatment.**—Potassium iodid in large doses restrains or arrests the disease. This drug, with the use of the x-rays, has proved curative in a number of cases. Complete excision has been successful in several cases, but cureting alone is apt to be followed by recurrence.

### ACTINOMYCOSIS

*Derivation.*—'Ακτίς, ray; μύκης, mushroom. *Synonym.*—Lumpy-jaw.

**Definition.**—Actinomycosis is a parasitic disease occurring in the lower animals and man, due to the ray-fungus, and characterized by deep subcutaneous tumors or swellings which break down and suppurate.

**Symptoms.**—The face and neck are the parts usually involved, the parasite in such cases gaining entrance to the tissues around carious teeth. The onset of the disease is insidious, weeks or months elapsing before the appearance of cutaneous manifestations.

The lesions consist of deep-seated tumors or swellings which, approaching the surface, become red or livid in color, and, breaking down, discharge a bloody seropus containing characteristic yellow granules. These granules are made up almost exclusively of fungus. Sinuses with uneven nodular edges persist for an indefinite period. The tumors may roughly suggest the appearance of sarcoma.

**Etiology and Pathology.**—The disease is due to the invasion of the organism by the actinomyces or “ray-fungus.” The fungus consists of club-shaped threads radiating from a common center. It is uncommon for the infection to gain entrance through the skin.



Fig. 147.—Actinomycosis (courtesy of Dr. W. T. Corlett).

**Treatment.**—The administration of large doses of potassium iodid has proved successful in many cases, and should be given thorough trial. Locally, irrigation with corrosive sublimate solutions is advised. In obstinate cases the parts should be thoroughly cureted. The use of the x-rays would seem to be indicated.

#### MYCETOMA

*Derivation.*—*Μύκης*, a fungus. *Synonyms.*—Podelcoma; Fungus-foot of India; Madura foot.

**Definition.**—Mycetoma is an endemic disease, due to the presence of a vegetable fungus, characterized by disintegration of the tissues, chiefly of the foot and hand.

**Symptoms.**—The disease occurs most frequently in India. In a typical case the foot is swollen and infiltrated and beset with pea- to nut-sized tubercles or nodules. These break down

with the formation of sinuses, which connect with the deeper structures and which give exit to a thin, seropurulent fluid containing whitish or blackish granules. Bony structures may become involved. The course is chronic, the disease lasting for years. The disease is chiefly encountered in India and neighboring eastern countries, although a few cases have been reported in this country.

**Treatment.**—Complete removal by means of the knife or curet is the only successful treatment. The use of the iodid of potassium has been suggested.

### SPOROTRICHOSIS

**Definition.**—Sporotrichosis is a chronic or, more rarely, an acute, infectious process, characterized by the formation of a local inoculation lesion followed by multiple cutaneous and subcutaneous nodules, which undergo suppuration and ulceration.

The disease in man was first described by Schenck in 1898, under the title "Refractory Subcutaneous Abscesses caused by a Fungus, Probably Related to the Sporothrix."

Since then Hektoen and Perkins, de Beurmann, and his associates in France, Brayton, Dor, Stein, Hyde, and others have reported cases. De Beurmann's name is intimately associated with the disease because of his clinical and pathological studies. About 100 cases have thus far been reported.

**Symptoms.**—The period of incubation following accidental inoculation with the causative sporothrix is quite uniformly between six and twelve days. The hand and forearm are the sites most often infected, although the face, thigh, leg, foot, and other regions may be the seat of the primary infection.

Following the infection, firm indolent cutaneous and subcutaneous nodules and tumors develop, which in the course of four to six weeks undergo softening and ulceration and give exit to a seromucoid discharge. Fistulous tracts may communicate with deep-seated abscesses. The abscesses and ulcers are surrounded by a reddish-violet coloration. These so-called sporotrichotic gummata are usually multiple, and have been observed to number as many as four score or more. They commonly develop along the line of the lymphatic vessels near the site of infection. At other times the tumors are scattered. There is associated enlargement of the neighboring lymphatic

glands. Other tissues than the skin may be exceptionally affected, such as the mucous membranes, the muscles, the joints, the bones, the testes, and the spinal marrow.

Clinically, there are two groups of cases, the chronic and the acute cases. Most cases run a chronic, afebrile course, without serious disturbance of the general health. In rare instances there are acute cases which run a rapid course, with high fever, prostration, emaciation, and digestive disturbances. Leukocytosis is usually present in sporotrichosis.

**Etiology.**—Two-thirds of the cases reported have been in men. The usual age is from the third to the sixth decade. Hyde and Davis state that some of the American cases of "mycotic or epizootic lymphangitis" in horses is due to the *sporotrichum Schenckii*, and that it is probable that human cases have been derived from the equine disease. The mold is, however, not uncommon about barnyards and untilled fields, and may infect both horses and men.

**Pathology.**—The gummata exhibit an intense inflammatory reaction of the connective tissue, most marked about the blood-vessels, with plasma cells and lymphocytes in the peripheral zone, epithelioid and giant-cells in the middle zone, and abscess in the center. Caseation, such as is seen in tuberculosis, is absent.

The sporothrix examined in the hanging drop from cultures several days old exhibits abundant mycelia, with oval or pyriform spores attached by fine pedicles. The spores are 3 to 5  $\mu$  in length and 2 to 3  $\mu$  in width. The mold grows best upon media containing sugar, but will, nevertheless, flourish on ordinary culture-media at room temperature. The parasite has, up to the present, not been found in the microscopic sections of human tissues. Experimentally, the fungus can be inoculated successfully into guinea-pigs, mice, rats, cats, and monkeys. The rat is the most susceptible.

**Diagnosis.**—The disease is most apt to be confounded with tertiary syphilis or tuberculosis of the skin. Occasionally deep trichophytosis may be simulated. Syphilitic gummata are less numerous, of slower development, and do not form large abscesses. Syphilitic ulcers are circular, with borders that are lined with a necrotic covering, and are not undermined.

The sporotrichotic gummata develop more rapidly and undergo suppuration sooner than tuberculous lesions; the discharge is mucoid instead of thin and granular; the scars are

not elevated and seamed; general lymphatic enlargement is usually absent.

Cultures from the pus readily disclose the presence of the characteristic fungus.

**Prognosis.**—Most cases of sporotrichosis recover under appropriate treatment.

**Treatment.**—The sovereign remedy against this disease is iodid of potassium in increasing doses, beginning with 10 grains three times a day. Locally, for the abscesses and ulcers, diluted Lugol's solution has been advised.

### VERRUGA PERUANA

Verruga is a specific febrile, infectious disease, endemic in certain valleys of the Peruvian Andes.

It is characterized by an intense anemia, muscular and joint pains, fever, and later by a peculiar eruption. It is transmissible by inoculation, the incubation period varying between eight and forty days. The cutaneous symptoms appear from twenty days to six months after the onset of symptoms. The eruption begins upon the face and extremities, later spreading to other parts. The mucous membranes participate in the process. The early lesions are itching red spots or vesicles; later, vegetative growths resembling warts, both sessile and pedunculated, appear upon these sites. The granulations may be small or large, discrete or confluent. Ultimately these warts, during the stage of retrogression, become desiccated and horny.

Microscopically, the disease is a connective-tissue new-growth resembling sarcoma.

### SYPHILODERMA

*Derivation.*—Συρ, and φίλος, a companion of swine. *Synonyms.*—Syphilis cutanea; Dermatosyphilis; Syphilis of the skin; Lues.

### SYPHILIS

**Definition.**—Syphilis is a chronic, systemic, infectious disease, due to inoculation with the spirochæta pallida. It is characterized by eruptive manifestations involving the skin and mucous membranes, but any tissue or organ may be affected. The disease is not infrequently transmitted to progeny.

**Symptoms.**—*Chancre.*—At the site of infection or entrance



of the spirochetes into the body (save in hereditary syphilis) certain tissue changes take place which give rise to a lesion recognized clinically as a chancre. This initial lesion of the disease develops after a primary incubation period which averages three weeks, but which ordinarily varies from twelve to thirty days, and in exceptional cases extends to forty or sixty days.

There are a number of *clinical varieties* of the chancre dependent upon the physical appearance of the lesion. The three chief varieties are: the *chancrous erosion*, the *chancrous ulceration*, and the *dry papule*. In addition, there are initial sores occasionally encountered which present certain deviating



Fig. 148.—Chancre of lip.

characteristics, among these may be mentioned the *multiple herpetiform chancre* of Dubuc, the *silvery spot* described by Taylor, of New York, and the *infecting balanoposthitis* of Mauriac. Space will not permit a detailed description of these various forms.

*Induration* is an important diagnostic feature of the chancre; by this is meant a sclerotic hardening of the tissues beneath and around the sore. It is essential to recognize that induration is not a feature of chancres in their early incipency. Fully ten to fourteen days or longer are necessary to develop the characteristic hardness. The secretion of the chancre is serous in character, although as a result of adventitious causes it may become purulent or seropurulent. Chancres are usu-

ally single, but occasionally two, three or more lesions may be present. After the healing of a chancre a more or less well-developed scar remains; at times this is depressed, at other times it is elevated.

In all cases of true chancre an adenopathy or enlargement of the neighboring lymphatic glands develops. There is also commonly an induration of the lymphatics, or, more properly speaking, of the perivascular lymph-spaces.

Chancres, for obvious reasons, appear usually upon or in the neighborhood of the genital organs. They may develop, however, upon any portion of the cutaneous surface or in any of the adjacent mucous cavities. The sites of extragenital



Fig. 149.—Chancre of chin. Patient alleges that she scratched an acne lesion after handling soiled linens in a laundry. Roseola on trunk.

chancres, in the order of their frequency, are as follows: lips, breasts (in female), buccal cavity, fingers and hand, eyelids and conjunctivæ, tonsils, throat, tongue, chin, cheek, trunk, arms, legs and thigh, neck, gums, etc.

**Stages of Syphilis.**—For purposes of simplicity in teaching syphilis has been divided into three stages: primary, secondary, and tertiary. This classification of Ricord is open to objection if interpreted as representing definite and determinate periods of the disease applicable to all patients. It must be remembered that the boundaries of these periods are artificial, and that symptoms ordinarily observed in the early intermediate or late stage may, in certain individuals, be noted earlier or **later than usual**. Syphilis is an uninterrupted, morbid process,

but is characterized by a fair degree of uniformity in the chronology of its manifestations.

The chancre and the associated adenopathy represent the *primary stage*. The *secondary stage* is characterized by a series



Fig. 150.—Macular syphiloderm (roseola syphilitica).

of constitutional symptoms, including the appearance of a generalized eruption. In the *late tertiary period* we note certain cutaneous outbreaks and involvement of various organs and tissues.



Fig. 151.—Annulopapular syphilid; common form in negroes.

The *eruption of syphilis* may be macular (erythematous), papular, vesicular (rare), pustular, bulloous, tubercular, gum-



Fig. 152.—Mucous patches on lip. Lesions are deeper and rather more excavated than usual

matous, ulcerative, or mixed. The macular, papular, vesicular, and pustular eruptions belong to the secondary period, and the tubercular, bullous, gummatous, and ulcerative to the late stage.

**General Characteristics of Syphilitic Eruptions.**—*Distribution.*—The early or secondary eruptions are generalized and more or less symmetric. The late or tertiary eruptions are circumscribed, and, as a rule, asymmetric. Syphilids are commonly seen on the scalp, particularly upon the hairy border, about the commissures of the mouth, the alæ of the nose, the genitalia, anus, palms, and soles.

*Color.*—Too much importance has been attached to the coloration of syphilitic eruptions. In the beginning, the early



Fig. 153.—Syphilitic alopecia.

lesions have usually a pinkish-red hue, but are colder and more subdued in color than in most inflammatory dermatoses. As they persist, they assume more of a brownish or yellowish-red color, and ultimately fade, leaving a yellowish-brown pigmentation. The large papular and tubercular lesions have commonly the so-called "ham or copper color," but this same hue may be noted at times in psoriasis, lupus, and other diseases. Syphilitic scars are apt to be smooth and pigmented.

*Polymorphism.*—The coincident appearance of various types of cutaneous lesions is commonly observed in the early eruptions of syphilis. Thus macules and papules or papules and pustules are frequently noted at the same time. This is doubtless due to the comparative chronicity of the process and the development of lesions in crops.

*Configuration.*—The early symptoms are generally distributed. In negroes, especially, there is a pronounced tendency to annular arrangement of lesions (Fig. 151). Nodular eruptions are prone to take on circular, crescentic, or serpiginous outlines.

*Absence of Subjective Symptoms.*—Syphilitic eruptions are remarkably free from itching, burning, or painful sensation. This applies to the vast majority of cases, but is not without exception. Early eruptions that develop with great rapidity may cause some itching; decided itching, too, may occur in the small papular syphilids, particularly when they scale. Syphilitic ulcers are distinctly less painful than corresponding lesions from other causes.

**General Symptoms of Secondary Syphilis.**—At the termination of the secondary period of incubation, which lasts on an average about six weeks, a train of constitutional disturbances is commonly noted. These are—(a) General enlargement of the superficial and deep lymphatic glands; (b) moderate fever, the evening temperature commonly reaching 100° to 101° F., although it may be higher; (c) lassitude and anorexia; (d) articular and muscular pains (these are apt to be worse at night); (e) anemia; (f) alopecia, producing irregular streaky or moth-eaten patches of hair-loss; (g) congestion and ulceration of throat, and mucous patches; (h) eruptions upon the skin.

#### WASSERMANN REACTION

The biologic test known as the "Wassermann test" was first brought to the attention of the medical profession by Wassermann, Neisser, and Bruck on May 10, 1896. Two weeks later Detre, working independently, published similar observations.

The Wassermann reaction is employed both as a *diagnostic test* and as a *therapeutic index*. It is based on the "complement deviation reaction" elaborated by Bordet and Gengou.

Briefly, the principles are as follows:

Repeated injections of red blood-cells of one animal into an alien species develop in the blood-serum of the latter a defensive

substance called "amboceptor," which has a specific affinity for these erythrocytes, and in the presence of "complement" prepares them for solution by the latter.

In the Wassermann test guinea-pig serum is used as *complement*, while the *amboceptor* is rabbit's blood, immunized against sheep's corpuscles. The sheep's red blood-cells, altered by the amboceptor, absorb the complement and undergo hemolysis.

Now, if the blood-serum of a syphilitic subject (presumably containing antibodies) is mixed under certain conditions with extract of syphilitic liver, called "*antigen*" (or of certain antigens made of alcoholic extracts of normal organs), a specific union occurs which, in the presence of the "complement," will absorb or fix the latter. When the amboceptor and sheep's corpuscles are later added, the complement having been absorbed, hemolysis will not take place. If the suspected patient's serum is not syphilitic, then the complement remains unabsorbed, and is left free to dissolve the sheep's erythrocytes sensitized by the amboceptor.

In the positive test (hemolysis restrained) the corpuscles settle at the bottom of the test-tube: when the test is negative (hemolysis), the fluid in the test-tube is diffusely stained with the free hemoglobin.

A positive test (with the following reservations) indicates active syphilis, *i. e.*, the presence of living spirochetes. (Positive reactions may be obtained in yaws and in a proportion of cases of scarlet fever, malaria, leprosy, etc., and within a period of twenty-four to forty-eight hours after the administration of ether.)

A negative reaction is presumptive, but not absolute, evidence of the absence of syphilis.

The Wassermann test is of great value in the diagnosis of obscure cases of syphilis, particularly of visceral lesions. It is also of importance in determining the extinction of the spirochetes in the system. Permanent negative Wassermann reactions indicate the cure of the disease.

In primary syphilis the reaction develops only in from five to thirty days after the appearance of the chancre. It is present in nearly all cases of secondary syphilis, and in a large percentage of tertiary cases.

Modifications of the Wassermann reaction, with a view to simplification, have been made by a number of workers; the best known of the modified tests is that of Noguchi.

The value of the Wassermann reaction depends in large measure upon the perfection of the delicate technic and the skill of the laboratory worker.

A further word of caution is necessary: a positive Wassermann reaction means that the patient whose blood is examined has active syphilis; it does not prove that the cutaneous eruption or other lesion under suspicion is syphilitic in character. A person suffering from syphilis may happen to be the subject of herpes zoster, psoriasis, cancer, or any other dermatosis.

The early eruptions of syphilis may be distinguished from the late eruptions as follows:

EARLY ERUPTIONS.

1. Accompanied by constitutional disturbances, sore throat, alopecia, etc.
2. Eruption generalized and symmetric.
3. Lesions comparatively superficial and not destructive.
4. Eruption macular, papular, or pustular.

LATE ERUPTIONS.

1. Frequently accompanied by osteocopic pains and stigmata of former manifestations.
2. Eruption circumscribed and asymmetric.
3. Lesions deep-seated and destructive.
4. Eruption nodular, gummatous, or ulcerative.

SYPHILODERMA ERYTHEMATOSUM (MACULAR SYPHILODERM; ROSEOLA)

The macular syphilid is the most frequent form assumed by the early eruption. It develops, usually, from six to eight weeks after the initial lesion, and requires a week to ten days for its full development. It is characterized by rounded, oval or irregular, pea- to finger-nail-sized, ill-defined macules, which are at first of a rose-red color, later becoming violaceous, brownish, or yellowish. The trunk, particularly the anterior surface, and the extremities are most frequently involved. In the beginning the lesions disappear under pressure of the finger; later similar manipulation discloses the presence of a brownish-yellow pigment in the skin. The face is usually exempt. The eruption lasts from one to four weeks. Papular and pustular lesions may later appear, particularly in untreated cases. Occasionally a roseola may partially relapse after disappearing.

**Diagnosis.**—The macular syphiloderm is to be differentiated from measles, tinea versicolor, and the rashes due to copaiba and other drugs.



| MACULAR<br>SYPHILODERM.  | MEASLES.   | TINEA<br>VERSICOLOR.  | DERMATITIS<br>MEDICAMENTOSA<br>(COPAIBA, QUININ). |
|--|--|---|---|
| (1) Associated symptoms of syphilis—mucous patches, alopecia, enlarged glands, remains of chancre, etc.                                  |  |   |   |
| (2) Fever occasionally and usually moderate.   | (2) Considerable fever and catarrhal symptoms, involving eyes, throat, and chest.  |   | (2) Fever occasionally.                           |
| (3) Eruption chiefly on trunk and extremities; face usually free.  | (3) Face first involved; later trunk and extremities.  | (3) Eruption confined to chest, shoulders, and back.  | (3) Face often involved.                          |
| (4) Eruption consists of pea-to finger-nail-sized, oval or rounded macules, at first rose-red, later violaceous, brownish, or yellowish. | (4) Eruption consists of pinkish-red irregular macules or maculopapules, at times crescentically arranged; appearance "blotchy." | (4) Eruption consists of large, irregular yellowish-brownish macules. Furfuraceous scaling. Fungus present. | (4) Eruption erythematous or urticarial.          |
| (5) Itching absent.  | (5) Itching moderate.  | (5) Itching slight.   | (5) Itching severe.                               |
| (6) Wassermann reaction, positive.   |  |   |   |

#### SYPHILODERMA PAPULOSUM

The papular syphilid may represent the first cutaneous outbreak of the disease, or it may follow in the wake of the roseola, developing at the site of disappearing macules.

Several varieties of papular eruptions are distinguishable, depending upon the size, shape, and course. In general, there are two types—the conical or *acuminate*, which develop about hair-follicles, and the non-follicular, or *flat* form. Of the former, there are two varieties—the *large* and the *small* (*miliary papular syphilid*). The *flat* syphilid has also a *large* and a *small* variety.

The **large papular syphiloderm** (**lenticular papular syphilid**) is a frequent form of the disease, associated with or follow-

ing the macular eruption. It is characterized by pea- to finger-nail-sized, rounded or oval, convexly flat, shining papules. The color is at first pinkish red, but soon changes to a brownish-red or raw-ham tint. The lesions develop slowly, and are primarily firm and smooth, but later scaly. The eruption is usually extensive, the forehead, nape of the neck, chin, arms, genitals, etc., often being particularly beset with lesions. The palms and soles commonly show lesions. Some of the eruptive elements are so large as to be appropriately termed tubercles. The eruption persists for several weeks or months, responding rather readily to treatment.



Fig. 154.—Maculopapular syphilid of face—eruption also on body.

During the stage of involution the papules undergo desquamation and produce a papulosquamous syphilid.

In the **papulosquamous syphiloderm (squamous syphilid)** the lesions are flattened and covered with thin, scanty, dirty-grayish scales. These lesions show a predilection for the palms and soles (*palmar and plantar syphiloderm*), where it constitutes an obstinate manifestation. When both palms and soles are affected, the eruption is probably an early one; when unilateral, it is late.

The large flat syphilid may also undergo change, giving rise to the *moist papule*.

The **moist papule (flat condyloma)** is a modified, large papular syphilid, occurring upon opposing skin surfaces, such as the nates, perineum, genitalia, etc. It differs from the dry papule in being moist, softer, and flatter, and covered with a grayish, mucoid pellicle made up of macerated epidermis. Large flat patches are occasionally formed through the coalescence of neighboring lesions. Moist papules occasionally



Fig. 155.—Papulonodular syphilid; early eruption; severe infection.

become hypertrophic and covered with warty, papillary growths (hypertrophic or vegetating papules).

The **acuminate papular syphiloderm (follicular syphilid; miliary syphilid)** occurs at the sites of hair-follicles. It may appear early or late in the first year of infection. It is not so common as the flat papular eruption. A *large* and *small* form are distinguished. The latter is characterized by a profuse eruption, most abundant upon the trunk, arms, and thighs, consisting of pin-head- to millet-seed-sized, rounded or acumin-

ated, firm papules, with vesicular, pustular, or scaly summits. The color is at first bright red, later, brownish red.



Fig. 156.—Squamous syphilid of palm.

One of the most characteristic features of the eruption is a distinct tendency to grouping of the lesions in clusters; this



Fig. 157.—Syphilis—flat condylomata about the vulva and thighs; characteristic "bacony" appearance.

is at times most conspicuous, while at other times it is less well pronounced. The eru appear unless

vigorously treated. Stains or slight depressions at the mouths of the hair-follicles are seen after the disappearance of the eruption. It is quite common to find interspersed pustules



Fig. 158.—Extensive small papular (follicular) syphilid.

present; indeed, the miliary pustular syphilid is a follicular syphilid in which the lesions generally undergo suppuration. The miliary papulopustular syphilid is far more common in negroes than in the white race.

**Diagnosis of the Papular Syphilid.**—The lesions in the large flat syphilid are so characteristic as scarcely to be confounded with any other disease. Leprosy may be excluded by the history, the more chronic course of the eruption, and the absence of associated symptoms of syphilis. The *miliary syphilid* may readily present difficulties in diagnosis. The lesions bear a close resemblance to lichen scrofulosus, but the



Fig. 159.—Miliary papulopustular syphilid in a negress; grouping well marked.

latter occurs only in youth and is largely limited to the trunk. *Psoriasis punctata*, *keratosis pilaris*, and *lichen ruber* may be excluded by the distribution and extent of the eruption, the grouping of the lesions, the presence of interspersed pustules, and the associated symptoms of

The *papulosquamous syphil*  
be confounded with *psoria*  
elbows and knees, the dr<sup>st</sup>

may  
be

infiltration of the patches, the involvement of the palms and soles, the history, and the presence of other than cutaneous lesions should clarify the diagnosis. The Wassermann test is of great importance in doubtful cases. The test is often positive in leprosy, a fact that must be borne in mind.

#### **SYPHILODERMA VESICULOSUM**

The vesicular syphilid is by far the rarest of all the cutaneous manifestations of syphilis. It occurs as small miliary or larger, pea-sized (varicelliform syphilid), occasionally umbilicated vesicles, developing usually upon regions where the skin is thin. Papules and pustules may also be present. The eruption is a comparatively early one and runs a rapid course. Not infrequently the vesicles surmount a papular base.

#### **SYPHILODERMA PUSTULOSUM**

**Syphiloderma pustulosum** may be divided into four sub-varieties: (1) Small acuminate pustular syphilid; (2) large acuminate pustular syphilid; (3) small flat pustular syphilid; (4) large flat pustular syphilid.

The small acuminate pustular syphilid (miliary pustular syphilid) may occur as the first eruption of syphilis, or may follow the macular or papular outbreak. It is usually profusely generalized, consisting of small, pin-head- to millet-seed-sized, acuminate pustules, seated upon a dull-red papular base. There is frequently a tendency to group in clusters. The lesions are located at the mouths of hair-follicles, and are seen to be perforated by hairs. They soon dry to crusts, which fall off, leaving a fringe-like, annular epidermal exfoliation around the base, which has been termed the "collaret." Miliary papules may also be present. The favorite regions are the arms, thighs, chest, and back.

The large acuminate pustular syphilid (acneiform syphilid; varioliform syphilid) is a rather uncommon manifestation, occurring early and running a rapid course. It consists of split-pea-sized or larger, acuminate pustules, somewhat resembling acne or variolous lesions. At times the eruption runs progressively through the stages of papule, vesicle, and pustule. The pustules dry to crusts, beneath which superficial ulceration may take place. The regions attacked are the scalp, face, trunk, and extremities. The eruption may be preceded by moderate fever.

**Diagnosis.**—*Acne* and *small-pox* are to be differentiated from this form of syphilis:

| PAPULOPUSTULAR SYPHILODERM.       | ACNE.                                     |
|-----------------------------------|---|
| 1. Concomitant signs of syphilis. | 1. Absent.                                |
| 2. Occurs usually in adult life.  | 2. Occurs at age of puberty.              |
| 3. Course acute.                  | 3. Course chronic, with exacerbations.    |
| 4. Distribution general.          | 4. Limitation of lesions largely to face. |
| 5. Color brownish red.            | 5. Color light or dark red.               |
| 6. Tendency to ulceration.        | 6. No tendency to ulceration.             |
| 7. Wassermann reaction positive.  |   |

*Small-pox* may be more closely simulated by the pustular syphilid than by any other disease—during epidemics of small-



Fig. 160.—Pustular syphilid resembling small-pox in a negress.

pox many errors of diagnosis are made. In small-pox there are pronounced fever and prostration forty-eight to seventy-two hours before the appearance of the eruption; the early



papules are "shotty," the vesicles much firmer than those of syphilis, and the evolution from papule to crust much more rapid than in syphilis. In the latter disease the remains of the chancre and associated symptoms are present.

The **small flat pustular syphiloderm (impetigoform syphilid)** is characterized by small, flat, pea-sized pustules, grouped in



Fig. 161.—Pustular syphilid; during an epidemic of variola this patient was sent into the small-pox hospital under erroneous diagnosis (Welch and Schamberg).

irregular clusters, and occurring in the first year of the disease. Crusting occurs early and is profuse (*pustulocrustaceous syphilid*), the color being yellowish, greenish, or brownish. Beneath the crusts, superficial or deep ulceration occurs. The favorite seats are the nose, mouth, beard, scalp, and genitals.

**Diagnosis.**—The small flat pustular syphilid may be differentiated from contagious impetigo and pustular eczema by the history and course of the disease, the occurrence of ulceration, and the concomitant signs of syphilis.

The **large flat pustular syphiloderm** (**ecthymaform syphilid**) occurs as a generalized eruption, consisting of large,



Fig. 162.—Ulcerative syphilid; this began as a papular eruption, which was at first mistaken for small-pox. Patient later developed fever, sloughing of soft palate, emaciation, etc., and barely escaped a fatal outcome.

finger-nail-sized, flat pustules, seated upon a dark-red base. The pustules tend rapidly to crust.

There are two varieties—the superficial and the deep. The superficial form is characterized by flat, roundish or oval, brownish crusts, beneath which is a superficial ulceration. This is a common and benign manifestation, occurring during the first year of the disease. The favorite seats are the back, shoulders, and extremities.

In the deep form, or *rupia*, the crusts are more bulky, conical, of a greenish or blackish color, and concentrically stratified,

like the layers of an oyster-shell. Beneath the crusts is a deep, punched-out ulcer, covered with a greenish-yellow, puriform secretion. This is a later and more malignant form.

#### **SYPHILODERMA TUBERCULOSUM (TUBERCULAR SYPHILID)**

This is a late or tertiary manifestation, occurring usually between two and ten years after infection. It is characterized by disseminated or grouped, pea- to hazel-nut-sized, rounded, smooth, firm, deeply seated nodules. The color is brownish red, bluish red, coppery, or yellowish brown. The lesions are,



Fig. 103.--Ulcerated tubercular syphilid. Scars of old lesions also present.

as a rule, comparatively few, and tend to become aggregated in groups, arranging themselves in circles or segments thereof. The coalescence of neighboring groups may produce patches of serpentine configuration (*serpiginous tubercular syphiloderm*). The eruption develops most frequently upon the face, particularly about the forehead and nose, but may appear upon the arms, trunk, legs, or elsewhere.

Tubercles disappear either by absorption, leaving a brownish stain, or by ulceration, with the production of scars. *Syphilitic*



Fig. 164.—Serpiginous syphilid; only patches present.



Fig. 165.—Ulcerated tubercular syphilid of nose and chin.

*ulcers* are deeply punched out, with sharp-cut edges, often crescentic in shape, and covered with a grayish-yellow, gummy

secretion which dries into brownish or greenish crusts. There is often an offensive odor.



Fig. 166.—Syphilitic ulcer on the tongue. Late manifestation.

**Diagnosis.**—The tubercular syphiloderm is to be differentiated from lupus vulgaris, leprosy, and epithelioma, particularly the first named disease.

#### TUBERCULAR SYPHILODERM.

1. Develops after the age of puberty.
2. Course more or less rapid.
3. History of infection.
4. Concomitant signs of syphilis.
5. Nodules firm.
6. Ulcers are deep, with sharp-cut edges. Discharge copious, crusts bulky and greenish.
7. Scars whitish, soft, and smooth.
8. Rapid healing under iodids and mercury.
9. Wassermann reaction, usually positive.

#### LUPUS VULGARIS.

1. Develops usually at or before puberty.
2. Course extremely slow.
3. History of infection, negative.
4. Concomitant signs, perhaps, of tuberculous diathesis.
5. Nodules soft.
6. Ulcers superficial, with soft, irregular, undermined edges. Discharge slight, crusts scanty and reddish brown.
7. Scars yellowish, shrunken, and hard.
8. Refractory to all but destructive measures.

#### SYPHILODERMA GUMMOSUM (GUMMATOUS SYPHILID)

This is a tertiary manifestation, occurring, as a rule, some years after the contraction of the disease. It is characterized by a circumscribed infiltration in the subcutaneous tissue, mani-

festing itself clinically as one or several slightly raised, rounded or flat, painless tumors (*gumma*, *gummy tumor*, *syphiloma*).

The overlying skin is, in the beginning, normal, becoming pinkish or reddish only when ulceration is threatened. The deposit is at first pea-sized, but in the course of several weeks or months reaches the dimensions of a hazel-nut or walnut. Untreated, it softens, breaks down, and ulcerates, destroying the skin, subcutaneous tissue, and at times other structures. Under treatment it may undergo absorption and disappear. Even after softening occurs, vigorous specific treatment may



Fig. 167.—Ulcerated gumma of foot.

lead to disappearance without ulceration. The scalp and forehead are favorite sites for gummata, although they may occur anywhere. In malignant syphilis gummata may develop much earlier in the course of the disease—even during the first year. The healing of a gumma is followed by less disfiguring scarring than would be anticipated from its appearance during the ulcerative stage.

**Diagnosis.**—The gumma may be distinguished from furuncle, carbuncle, abscess, fibroma, lipoma, etc., by the origin, course, and appearance of the lesion and the associated history.

**SYPHILODERMA BULLOSUM (BULLOUS SYPHILID; PEMPHIGUS SYPHILITICUS)**

This occurs as an early symptom in hereditary syphilis and, more rarely, as a late manifestation in the acquired form. The blebs are discrete, disseminated, round or oval, pea- to walnut-sized, and surrounded by a slight areola. The contents are at first serous, rapidly becoming purulent, and drying into brownish or greenish crusts. The crusts may be large, bulky, and raised or rupial, as seen in the large flat pustular syphiloderma. Beneath the crusts are erosions or ulcers, which heal with the formation of pigmented cicatrices. The bullous syphilid usually occurs in broken-down, cachectic individuals.

A *pigmentary syphilid* is occasionally seen about the back of the neck in women, particularly in brunettes. In rare instances it may occur in men, and in other localities. It consists of faint "café au lait," rounded or oval spots of finger-nail size, with intervening areas of skin which appear to be lighter than the normal skin tint. In many cases it is difficult to determine whether one is dealing with hyperpigmented patches or a "leukoderma syphilitica." Considerable difference of opinion exists with regard to this eruption.

The pigmentation or staining of the skin so common after various syphilitic eruptions should not be confounded with the above-described condition.

**HEREDITARY OR CONGENITAL SYPHILIS**

Syphilis may be transmitted from either father or mother to offspring, although it is surer to be conveyed by the latter. Even if the mother be infected with the disease some months subsequent to conception, the disease is transmitted. A woman may be free of manifestations of syphilis and, nevertheless, give birth to a syphilitic infant. Syphilitic infection *in utero* is extremely apt to cause miscarriage or the birth of stillborn children.

While infants are occasionally born with the syphilitic eruption upon them, it is far more common for it to develop some weeks after birth. The majority of infected infants manifest an eruption during the first month. Nearly all cases exhibit the secondary outbreak before the end of the second month, and only rarely is it delayed after the third month. The most common eruptions are the macular, papular, and bullous.

The *macular*, or *erythematous*, eruption, consists of finger-nail-

to palm-sized, indistinct, yellowish, brownish-red or copper-colored, erythematous patches, covered with a shining and wrinkled epidermis. The palms, soles, buttocks, thighs, and genitalia are frequently attacked. The patches may be dry or moist, the latter resembling at times erythema intertrigo or eczema.

The *papular* eruption often develops from the macular, the combination constituting the commonest syphilid observed in the infant. The papules are pea- to finger-nail-sized, smooth, glazed, and usually of a brownish or yellowish-red color. Occurring in the folds of the skin, they often degenerate into moist



Fig. 168.—Annulopapular syphilid in a negro infant suffering from hereditary syphilis.

papules. Where skin surfaces are in contact, as around the anus, *flat condylomata* or moist papules are prone to develop.

The *bullous syphilid* is not infrequently present at birth or develops soon afterward. It is a comparatively common form in hereditary syphilis, occurring in about one-quarter of the cases. Its occurrence is an evidence of severe infection. The palms, soles, and face are the most frequent seats of the blebs. The eruption consists of variously sized, ~~hemispherical~~ hemiglobular bullæ, situated upon an unhealthy skin. When rupture takes place, an excoriated

1.

ptions are comparatively rare,



particularly the former. Pustules may occur upon the apices of small papules, or the ecthymatous form may be present; the latter is a severe form, and is usually associated with profound cachexia.

The *tubercular and gummatous* syphilid is uncommon in hereditary infection. It is a late manifestation, and when present, develops usually some years after birth. There are other highly suggestive manifestations of syphilis. Kaposi regarded the *brownish-red, dry, fissured, and glazed appearance of the palms* as specially characteristic.



Fig. 169.—Syphilitic dactylitis (gumma), hereditary syphilis.

The syphilitic infant presents a weazened, senile, emaciated facies, which at first glance suggests the disease.

*Coryza* or *snuffles*, is an early and prominent symptom of hereditary infection.

*Rhagades* or fissures, are commonly observed about the commissures of the mouth and other orifices. The frontal and parietal bones may be thickened in the form of circumscribed *bossy swellings*. The hair is often scanty, particularly over the temples. The long bones at times exhibit an inflammation about the epiphyses. *Syphilitic dactylitis* may also be present. In later years, often around the age of six, *keratitis* and other eye-lesions may develop, as well as *ear troubles*. The *Hutchinson teeth*, so characteristic of hereditary syphilis,

are observed in the second or permanent teeth. The upper central incisors, which are the most diagnostic, are peg shaped with the cutting-edge smaller, and crescentically notched. Enlargement of the spleen with an associated anemia is commonly observed.

**Etiology and Pathology.**—Syphilis is an infectious granuloma, due to the invasion of a specific parasite. It would appear at the present time that the causative agent is the *Spirochæta pallida*, discovered by Schaudinn and Hoffman. This organism is found in the initial lesion, in nearly all the morbid lesions of the secondary period, and frequently in late lesions, such as gummata. In congenital syphilis it is demonstrable not only in the skin, but in most of the inner organs.



Fig. 170.—Hutchinson's teeth in a child with hereditary syphilis.

The syphilitic process is characterized by a distinctly circumscribed and homogeneous cell-infiltration, tending to spread upon the periphery, at the same time undergoing central involution. The cell-infiltration exhibits a characteristic tendency to surround blood-vessels and lymphatics; it is alleged that the veins and perivascular lymph-spaces are chiefly implicated. The infiltrate, which lies in the corium and subcutaneous tissue, disappears either by absorption or ulceration.

**Prognosis.**—The prognosis of acquired syphilis is, in the majority of cases, favorable. Syphilis is, however, a large factor in determining late degenerative changes in visceral organs and tissues. Malignant cases in rare instances prove fatal. In hereditary syphilis the prognosis is guarded, many infants succumbing to the disease.

**Treatment.**—The treatment of syphilis should be begun as soon as the diagnosis is established. This can often be determined during the primary stage by the finding of spirochetes in the serum of the initial sclerosis. Where facilities for such an examination are not at hand, the early diagnosis may be facilitated by a Wassermann test, which is often positive late in the primary stage.

It is regarded as good practice, at the present time, to excise the initial lesion, if it be recognized early and be located in some region that can be readily ablated. Even though constitutional infection is not prevented, the number of spirochetes entering the body is lessened. Various substances have, in similar manner, been injected beneath and around the chancre to destroy the spirochetes.

The treatment of syphilis has been revolutionized by the introduction of the Wassermann test, and by the elaboration, by Ehrlich, of dioxydiamido-arsenobenzol.

Before the introduction of the Wassermann test, it was the general practice to treat sufferers from syphilis for three or four years, and then cease, provided that no further evidence of the disease manifested itself.

In the light of our present knowledge a patient must be treated until he becomes permanently Wassermann negative.

It must not be forgotten, in the general enthusiasm for the new medicament, that we possess other drugs which are capable of exerting a specific influence upon syphilis and its manifestations. These we shall consider first:

*Mercury* has been used for centuries in the treatment of syphilis. It has doubtless cured thousands of syphilitic subjects. It is not always well borne, and in some individuals it fails to effect a disappearance of existing lesions in doses that can be tolerated.

Mercury may be administered by mouth, by inunction, by fumigation, and by hypodermic and intravenous injection.

*By Mouth.*—Treatment by mouth is regarded with much less favor than by some of the more intensive methods. Its convenience, however, makes it the most employed route, certainly in the hands of the general practitioner. While its influence on the disease is distinctly less vigorous than hypodermic injections or inunctions, yet I have known patients exclusively treated by mouth to be cured of the disease, as demonstrated by the Wassermann test.

The preparation most often prescribed is the protiodid or green iodid of mercury. This may be given in doses of  $\frac{1}{8}$  to  $\frac{1}{4}$  of a grain three, four, or five times a day. A little colicky pain is often produced at first, but tolerance is usually established.

Mercury with chalk (*hydrargyrum cum creta*) is better borne, and is less apt to cause looseness of the bowels. It may be employed in one- or two-grain doses three or four times a day. *Calomel* in doses of one-half to two grains, thrice daily, may also be used. The *bichlorid of mercury* (gr.  $\frac{1}{4}$  to  $\frac{1}{2}$ ), either in pill or in liquid form, is preferred by some.

*Inunctions*.—Inunctions are of great efficiency, and may always be relied upon to produce a rapid effect. They are extensively used in Germany, where courses of thirty rubbings are employed periodically. One dram of the 50 per cent. mercurial ointment (*unguentum hydrargyri fortior*) is carefully rubbed in daily. The duration of the rubbing is a most important consideration. Twenty minutes should be the minimum duration of the inunction. Longer periods are necessary when the skin is not particularly absorbent. The areas usually employed are the insides of the thighs, the lateral surfaces of the chest and abdomen, and the insides of the arms and forearms. When the rubbing is carried out by a masseur, the back constitutes a convenient expanse of surface for the broad sweep of the hands. A hot bath shortly before the rubbing increases the absorbing power of the skin. Mercury for inunctions is usually dispensed in the dose to be used in wax-papers.

*Hypodermic Injections*.—Mercury is used hypodermatically, both in the form of soluble and insoluble salts. The chief disadvantage of hypodermic injections is the pain produced. This varies greatly in different subjects, but in some is sufficient to cause them to refuse to continue the treatment. The insoluble salts produce much greater and more persistent pain than the soluble preparations.

The bichlorid of mercury is one of the most frequently employed soluble salts:

|                                    |           |
|------------------------------------|-----------|
| R. Hydrargyri bichloridi . . . . . | gr. viij; |
| Sodii chloridi . . . . .           | gr. iv;   |
| Aquæ destillatæ . . . . .          | 3j.—M.    |

Sig.—Inject 15 to 20 minims two or three times a week into the gluteal muscles.

Among the insoluble salts are the salicylate of mercury, calomel, metallic ~~merc~~ (oleum cinereum), etc.

The following formula is much employed:

R. Hydrargyri salicylat..... 10 gm;  
 Lanolini..... 3 gm.;  
 Olei olivæ ..... 30 gm.—M.  
 (1 c.c. = 3 grains of salicylate of mercury.)

Sig.—1 to 3 grains injected deep into the gluteal muscles every five to seven days.

The injections commonly cause inflammatory nodulations, and in rare instances abscesses and necrosis. If employed unskilfully, serious salivation and poisoning may result.

The advantages of hypodermic injections are the accuracy of the dosage, their cleanliness, the rapidity of effect, and the general efficiency of their influence upon the lesions and the underlying disease.

*Fumigations* or mercurial vapor-baths are useful in appropriate cases; they are especially valuable in ulcerative lesions of the body. *Calomel* (20 to 30 grains) is vaporized in a receptacle, the body of the patient being in a cabinet or surrounded by a tent of some kind.

The *dose of mercury* for different patients varies considerably. When it is well borne, no matter how administered, it should be carefully increased until it produces an effect upon the manifestations of the disease present or upon the patient.

*Iodids*.—The potassium salt is the drug usually administered. It is of particular value in late eruptions, and should be combined with mercury. The iodids are often necessary in the early stages of syphilis to combat fever, headache, or bone pains. The iodids are ordinarily given in from 5- to 15-grain doses. At times much larger doses are necessary. The following makes a palatable combination:

R. Hydrarg. chlor. corrosiv..... gr. i-ij;  
 Potass. iodid..... ʒij-iv;  
 Tinct. cardamomi comp..... q. s. ad ʒiij.—M.  
 Sig.—One teaspoonful in water after meals.

When the iodids are not well borne by the stomach, it is well to administer them in saturated solution, well diluted in milk, given immediately after meals.

The iodids are of little or no value in the treatment of squamous syphilis of the palms and soles, and of syphilitic glossitis.

*Arsenobenzol* or *Salvarsan*.—In 1910 Ehrlich, aided by Hata and Bertheim, introduced a synthetic arsenical compound of

complicated formula in the treatment of syphilis. The chemic name of the drug is dioxydiamido-arsenobenzol ( $C_{12}H_{12}O_2N_2As_3$ ). It is dispensed as a dichlorhydrate, a yellowish powder containing 34 per cent. of arsenic. It oxydizes on exposure to air, and is on this account put up in air-free tubes. The peculiar molecular form in which the arsenic is held prevents it from combining with the tissues, and this prevents arsenical poisoning. The drug has a specific affinity for spirilla, which are experimentally demonstrated to be destroyed by it.

There are several methods of administration. While at the present time the *intravenous* method is generally preferred, it is impossible to know what the ultimate sanctioned mode of administration will be.

*Subcutaneous Administration.*—The contents of the dispensing vial, usually containing 0.6 gram of salvarsan, are emptied into a sterile mortar and carefully rubbed up with 9 to 10 drops of a 15 per cent. sterile caustic soda solution. There is then added, with constant stirring, the desired amount of sterile distilled water (5 to 10 c.c.). A fine suspension is formed, which should be tested with litmus paper to determine whether it is exactly *neutral*. If it is not, a drop of caustic soda solution or of acetic acid may be added, as the reaction demands. With an appropriate sterile syringe and a needle of large caliber the suspension is injected deep into the subcutaneous tissues to the inner side of the scapula. The site of the injection must be rendered surgically aseptic.

The subcutaneous injections are commonly very painful, and require the use of an anodyne for a day or two. An infiltration is often formed which may last months, and which in some cases forms a sterile abscess as a result of the necrosis of tissue. This method of administration, while commonly satisfactory as to its influence on lesions, is the least efficacious mode of giving the drug.

*Intramuscular Injections.*—The salvarsan is rubbed up in a small, sterile mortar with a 15 per cent. solution of sodium hydrate added drop by drop until the drug is completely dissolved. From time to time a few drops of sterile water may be added to aid in the solution. Ordinarily, it will require from 1 c.c. to 1.2 c.c. of the sodium hydrate solution. Hot sterile water is then added to bring the quantity up to 6 or 8 c.c. The injection is given intramuscularly in the outer side of the buttock. The

needle should be pointed downward. Massage of the site helps to diffuse the injected fluid.

**Intravenous Injections.**—The entire contents of the vial containing salvarsan are deposited in a sterile mixing jar of 250 c.c. capacity. Hot *sterile distilled water* is poured upon this, and the jar is thoroughly shaken until the salvarsan is completely dissolved. There is then added drop by drop about 23 minims (sometimes less) of a sterile 15 per cent. solution of caustic soda. At first a fine precipitation is produced, but when the fluid becomes alkaline, this clears up. The entire amount is now increased to 250 c.c. by the addition of sterile distilled water. It is highly important that the solution should be *absolutely clear*, otherwise its injection may cause alarming symptoms. It is essential to use distilled water in the preparation of the drug, otherwise it may be impossible to obtain a clear solution. The solution is now filtered through sterile gauze into the cylindric container (Weintraud apparatus) to which a rubber tubing and needle are attached. (This apparatus should be boiled before each injection.)

The forearm is rendered surgically aseptic, and a tourniquet is applied to the arm. The detached needle is inserted into a distended vein. When the flowing of blood indicates that the needle is in the vein, the tubing with the fluid flowing from it should be adjusted to the needle, the tourniquet quickly removed, and the solution allowed to run in by gravity pressure. The injection should require about eight minutes.

There is another method which, to my mind, is preferable. Prior to pouring the salvarsan solution into the Weintraud cylindric funnel, about 50 c.c. of warm sterile physiologic salt solution (made with distilled water) is poured in. The needle attached to the tubing is inserted into a vein, and the solution allowed to flow. If the needle is not in the vein, a subcutaneous swelling occurs, and the needle must be withdrawn and inserted into another vein. After the salt solution has fallen in level to the bottom of the cylindric funnel, the salvarsan solution is added. This procedure prevents the possibility of the salvarsan being injected outside the vein, a most unfortunate accident, as it causes intense and persistent pain, and commonly leads to the formation of an abscess and sometimes contracture. It is good practice to follow the salvarsan solution with 25 to 50 c.c. of physiologic salt solution in order to wash out all of the salvarsan in the tubing.

*After-effects.*—Various reactive symptoms, such as chills, moderate rise of temperature, nausea, vomiting, abdominal pain, or diarrhea, may occur in from one to six hours after the injection, more particularly after the intravenous administration. These, however, are of short duration.

*Injections of Oil Suspensions.*—The drug may be rubbed up in some sterile thin oil, as sesame oil, oil of sweet almonds, liquid paraffin, etc. No alkali is used. These oil suspensions are injected into the buttocks. The full dose may be administered or fractional doses of 0.1 gram may be given at intervals of three to seven days until 0.6 gram has been received. The injection of 0.1 gram of 1 c.c. of oil is practically painless, and is a convenient method of treating outdoor hospital patients.

*Relative Merits of the Different Modes of Administration.*—The subcutaneous method is usually very painful, and is not infrequently followed by tumefaction and necrosis. It is the least efficacious. The intragluteal injection of alkaline solution is usually painful, and often produces tumefactions. It is more efficient than the subcutaneous method, but less intensive in its effect than the intravenous administration. The intravenous method is practically painless, and does not produce inflammatory indurations. The drug is more rapidly eliminated, but, nevertheless, has the most rapid influence on existing lesions. It is the method of choice.

*Indications for Salvarsan.*—Sufficient is known concerning the effects of salvarsan to justify its use in all cases of syphilis when no distinct contraindications exist. It is especially indicated in—(a) Cases of malignant and precocious syphilis; (b) cases resistant to mercury or those in which an idiosyncrasy against this drug exists; (c) cases in which mercury fails to prevent relapses; (d) in ulcerative lesions of the mucous membranes; (e) in visceral and nerve syphilis; (f) in syphilitic cachexia; (g) in latent syphilis with persistent positive Wassermann reactions; (h) in the early stages of tabes dorsalis and paresis; (i) in primary syphilis with a view to aborting the disease; (j) in hereditary syphilis.

*Contraindications.*—The following conditions contraindicate the use of salvarsan: (a) Myocarditis or other grave cardiac disease; (b) severe renal disease of a non-syphilitic character; (c) advanced degenerative conditions of the central nervous system; (d) profound debility or cachexia.



*Outline of Treatment of Syphilis with Salvarsan.*—In the light of our present knowledge one of the best methods of treating early syphilis is to give the patient two or three intravenous injections of salvarsan at intervals of about a week. This should be followed by a course of 30 mercurial inunctions or 20 injections of an insoluble mercury salt. After this the blood should be tested at intervals of a month, and further treatment guided by the result of the Wassermann reactions. There is reason to believe that such a course will cure a considerable percentage of cases in a relatively short time.

*Treatment of Hereditary Syphilis.*—As in acquired syphilis, the best remedies are salvarsan and mercury. Owing to the fact that the internal organs in hereditary syphilis swarm with spirochetes, salvarsan should be used unless the infant is too weak and puny. It is almost impossible to give intravenous injections to infants, owing to the minute size of the veins. Intragluteal injections are best used. For a new-born infant one may give 0.005 to 0.03 gram of salvarsan. When the infant is extremely weak, the mother may be injected and the child obtain the benefit of the treatment through the maternal milk. If mercury is preferred in the beginning, it should be used in the form of inunctions. They may be prescribed as follows:

R. Ung. hydrargyri }  
lanolini } .....āā ʒiv.—M.

M. et in partes No. viii div.

Sig.—Spread one portion upon abdominal binder each day or rub into skin.

Mercury may also be administered internally in the form of calomel, gr.  $\frac{1}{12}$  to  $\frac{1}{6}$  thrice daily, or mercury with chalk, one-half grain three times a day.

The Wassermann reaction and the clinical symptoms should be the guides as to the duration of treatment.

## LEPROA

*Derivation.*—Λεπρός, rough or scaly. *Synonyms.*—Leprosy; Elephantiasis græcorum.

**Definition.**—Leprosy is a chronic infectious disease due to a specific bacillus, affecting with predilection the skin and nervous system, with the production of infiltrations, ulcerations, anesthesia, paralysis, and gangrene.

Leprosy is distributed over almost a quarter of the habitable globe. It occurs not only in the tropics, but also in the cold regions of the north. It is a common disease in China, Japan, India, the Philippine Islands, and in parts of Africa. In Europe it is chiefly observed in Norway, Russia, Spain, Portugal. It is found in Iceland, New Brunswick, Canada, West Indies, Central and South America, and the Hawaiian Islands. Within the borders of the United States it has principally been noted in Louisiana, California, and among those of Scandinavian origin in Minnesota and Wisconsin.

**Symptoms.**—The *period of incubation* is most difficult to establish, as the time and manner of infection are generally unknown. It has been estimated by various observers to be between a few weeks or months and two, five, ten, or more years.

For convenience of description three varieties of the disease are recognized: (1) Nodular or tegumentary leprosy; (2) anesthetic or nerve leprosy; (3) the mixed type.

**Nodular Leprosy (Lepra Tuberculosa).**—*Prodromal symptoms*, such as mental depression, languor, malaise, anorexia, nausea, and bone pains, may precede the characteristic manifestations of the disease by several weeks, months, or years. Febrile symptoms commonly occur in the prodromal stage of tubercular leprosy. The fever is intermittent, often accompanied by prostration, and preceded by chills. It may recur with each new outbreak of tubercles.

*Eruptive Stage.*—This is commonly characterized by the appearance of smooth, reddish, yellowish, or brownish, bean-sized, infiltrated spots or macules. The color depends somewhat upon the race and complexion of the subject.

The spots may disappear and reappear several times before the characteristic tubercles of the disease develop. The latter may appear upon the previously healthy integument or may develop upon the pigmented sites of old macular patches.

The nodules begin as pin-head- to pea-sized papules of a pinkish-red or yellowish-brown color. They gradually increase in size and may reach the dimensions of a hickory-nut or walnut. They are usually rounded in shape, and in consistence are relatively soft. When the nodules are in close juxtaposition, they run together and form infiltrated patches with an irregular or mammilated surface.

The face is a favorite seat of the eruption. 777

most attacked are the forehead (particularly in the region of the eyebrows), cheeks, ears, nose, chin, lips, and the backs of



Fig. 171.—Macular leprosy (Sandwich Island case).

the forearms and hands. The eruption is extremely rare upon the scalp, glans penis, and the palms and soles.

In an advanced case of tubercular leprosy the entire face is beset with tubercles and leprous infiltrations. There are marked thickening of the forehead and an exaggeration of the natural furrows of the skin. This produces the so-called "leonine" expression. The nose and ears are swollen and studded with nodules; the lips are thickened and everted; the eyebrows are scant or entirely lost; the voice is hoarse and raucous; the lymphatic glands are swollen. The patient loses all semblance of his former self, and presents a terrible picture of disfigured humanity. The mucous membranes of the mouth, nose, eyes, pharynx, larynx, and vagina may become the seat of small tubercles.

**Course.**—Leprous nodules may persist unchanged for months or years, or they may undergo resorption or ulceration. The softening and breaking down of the nodules lead to the formation of leprous ulcers; these are shallow, indolent ulcers with defined borders and a viscid surface discharge, which dries in the form of thick crusts. At times ulceration may be extensive and lead to a great loss of tissue, exposing ligaments and bony structures. Ulceration occurs most frequently upon the extremities.

Leprosy tends, like syphilis, to the production of sterility; as the disease advances, atrophy of the testicles and impotence develop.

**Duration of the Disease.**—Leprosy is, in most cases, a progressive disease. Patients may live for many years unless carried off by intercurrent maladies. A very large number die of lung, kidney, or intestinal complications.

**Anesthetic Leprosy.**—The nerve type of leprosy presents quite a different picture from tubercular leprosy. The prodromal period is longer, and there is an absence of fever. The symptoms are largely those of a multiple neuritis, with pronounced trophic changes.

The primary eruption begins either as *blebs* or *erythematous spots*. Disturbances of sensation, such as burning or itching, may precede the outbreak of the cutaneous lesions. The macular patches are of a bluish-red or reddish-brown color, later becoming yellowish, brownish, or sepia tinted. They are round or oval in shape, and tend to spread upon the periphery and heal in the center. Coalescence of neighboring patches leads to the formation of large gyrate or serpentine figurations, with reddish, sharply defined borders, and pale, achromic centers.

During the period of increased coloration the patches are hyperesthetic; as they clear up in the center they are prone to become anesthetic. The loss of sensation is, however, not limited to these patches, but extends over the area of distribution of affected nerve-trunks.



Fig. 172.—Tubercular leprosy. Patient, aged fifteen. Disease of three years' duration. Began as pin-head-sized nodules on face (Sandwich Island case).

As a result of the anesthesia the patient often burns or scalds himself through absence of sensory warning. Early in the disease tactile sensation may be preserved, when appreciation of pain and temperature sense are destroyed; later all sensory function is abolished.

The macular patches are observed chiefly upon the trunk

and extremities; the hair over affected patches is apt to whiten or fall out. As a result of cessation of perspiration over the parts involved the skin becomes dry and scaly, or smooth, glistening, and atrophic in appearance.

The *bullous* eruption occurs chiefly upon the extremities, in the form of blebs of variable size, containing clear, serous fluid. The loss of the epidermal covering exposes areas resembling in appearance burns or scalds. Upon healing, cicatrices or pigmented spots are left.



Fig. 173.—Leprosy of mixed type of four years' duration. Nodules on forehead; anesthesia of legs.

*Nerve Manifestations.*—As has been stated, the symptoms of nerve leprosy are those of a multiple neuritis. There are neuritic pains, often paroxysmal, with accompanying hyperesthesia. Later, loss of sensation, more or less pronounced, is observed. Paralysis and atrophy of muscles are frequent expressions of the leprosy nerve process. It is not uncommon for a one-sided facial paralysis to occur. Paralysis of the arm, with atrophy of the muscles of the hand and tendinous contractions, produce the "leper claw," so suggestive of

disease. Pronounced deformities of the feet may also result from paralysis and contractures.

The occurrence in lepers of a deep ulceration (plantar ulcer) upon the sole of the foot is highly characteristic.

The bones of the fingers and toes undergo a rarefying osteitis and become absorbed, leading to shortening or loss of the digits without ulceration. The terminal members may, however, be lost as a result of gangrene, spontaneous amputation taking place. When healing occurs, deformed stumps of the hands and feet remain (*lepra mutilans*). This horrible mutilation is quite painless, as all sensation is gone.



Fig. 174.—Chinese leper: mixed type; nodules on face; facial palsy; ulceration of fingers; leper claw.

The leprous process manifests a predilection for the ulnar and peroneal nerves. A valuable diagnostic sign is the palpable bulbous or fusiform enlargement of the ulnar nerve felt behind the olecranon process. This occurs quite early in the disease. Anesthesia of the soft palate, uvula, and pharynx is also observed.

Patients with anesthetic leprosy live longer than tubercular cases. They commonly die from intercurrent diseases or intestinal complications.

**Mixed Leprosy.**—This represents a combination of the anesthetic and nodular forms, and in this country is more common than the pure types. In some instances the symptoms of nodular leprosy develop first, those of nerve leprosy being later engrafted; in other instances, the order of development is reversed.

**Etiology.**—Leprosy is caused by the invasion of the body by the *Bacillus lepræ* of Hansen. The disease is but feebly contagious, and appears to require particular conditions of soil to render infection possible. Hereditary transmission of leprosy does not take place, although it is possible that a predisposition to the disease may be inherited. Leprosy is practically never seen in infant life, and is rare under the age of ten. Climatic conditions influence the spread of the disease—hot, moist localities and damp, cold regions favoring dissemination. The temperate climate of the United States and Europe is unfavorable to the development of leprosy. The individual may become infected with leprosy through any wound or abrasion of the skin. The upper respiratory tract, particularly the nasal mucous membrane, is now suspected of being the usual avenue of infection.

**Pathology.**—The nodular lesions are produced by deposits of cells in the corium and subcutaneous tissues similar to those seen in lupus and syphilis.

The specific bacillus is found in the tubercles, the infiltrations, the mucous membranes, the lymphatic glands, spleen, liver, kidneys, etc. In nerve leprosy the bacilli are found in the nerves, particularly in the connective tissue surrounding them.

Clegg has grown lepra bacilli in symbiotic relation with the amoeba coli, and Duval has succeeded in obtaining pure cultures of the lepra bacillus. He also claims to have successfully inoculated Japanese dancing mice.

**Diagnosis.**—Advanced cases of leprosy are readily recognized by those who have had any experience with the disease. Incipient or atypical cases may present difficulties of diagnosis. The diseases which may resemble leprosy are syphilis, lupus, mycosis fungoides, morphea, vitiligo, syringomyelia, etc.

The nodules of *syphilis* are usually smaller, rounder, and redder than those of leprosy; they are prone to circular arrangement and run a more rapid course. *Lupus vulgaris* is apt to



be more circumscribed in extent: the nodules are apple-jelly colored, very soft, and often set in scar tissue. *Mycosis fungoides* may in its early stages closely simulate leprosy, but the patches are redder and more eczematous in appearance; later fungating ulcerating growths develop upon them.

In all doubtful cases of nodular leprosy excision of a lesion and examination for the lepra bacilli should prove decisive.

In anesthetic leprosy the loss of sensation is a most important diagnostic symptom. This will readily differentiate the disease from morphea, vitiligo, and various pigmentations. Syringomyelia presents at times a close resemblance to nerve leprosy; it may be distinguished by the absence of cutaneous discolorations, the loss of heat and pain sensation with preservation of the tactile sense and the exemption of the facial muscles. A valuable sign of nerve leprosy is the enlargement of the ulnar nerve behind the olecranon.

**Prognosis.**—The prognosis of leprosy is usually unfavorable, most cases progressing to a fatal termination. It is not entirely hopeless, as symptomatic cures are effected in a small percentage of cases.

**Treatment.**—Nutritious food, good hygiene, general tonics, and removal to a healthful temperate climate are important therapeutic considerations. Daily hot baths are of distinct value.

Internally, the most important remedies are chaulmoogra oil, gurjun oil, and strychnin. Chaulmoogra oil appears to have given more consistent results in tubercular leprosy than any other medicament. It is given in capsule or emulsion, in doses beginning with three minims, three times a day, and increasing to thirty or more if the patient's stomach will bear it. Gurjun oil is also highly recommended. Crocker has obtained good results with hypodermic injections of mercurials. Strychnin is principally of value in nerve leprosy, and should be given in ascending doses.

Locally, friction with oils, such as chaulmoogra oil, gurjun oil, or any other oil, is advantageous. Nodules may be treated with the electrocautery or thermocautery, or exposed to the x-rays, often with good results.

## FRAMBESIA

*Derivation.*—Fr., *framboise*, a raspberry. *Synonyms.*—Yaws; Pian; Peruvian wart.

**Definition.**—Frambesia is an infectious disease, endemic in certain tropical countries, characterized by papules, tubercles, and tumors having the appearance of raspberries.

**Symptoms.**—The eruptive phenomena of the disease are preceded by a prodromal stage which may last one or two weeks. There is often moderate fever, which is prone to be followed by glandular intumescence, rheumatoid pains, and the appearance of the eruption. Several varieties of cutaneous lesions are described. The yaws tubercles vary in size from a pin-head to a cherry or larger. They are smooth at first, but later acquire an irregular surface, due to warty excrescences; these are often pinkish, suggesting the appearance of a raspberry; therefore the name, frambesia. The vegetations are covered with an exuding secretion which dries in the form of crusts resembling yellow beeswax. Ulceration may occur, with the discharge of a thin, fetid, yellowish fluid. Lesions may develop in the mouth, looking somewhat like mucous patches.

In other cases small or large patches of branny desquamation may be present, beneath which papillary overgrowth takes place. The face, upper and lower extremities, and genitalia are the parts most attacked.

The disease lasts two to six months in mild cases, and several years in severe forms in debilitated individuals.

Frambesia is confined to tropical countries, and is observed chiefly on the west coast of Africa.

The disease is contagious, and one attack protects against future infections. By some observers the affection is regarded as a tropical form of syphilis.

Castellani has found in yaws a spirochete closely resembling the parasite of syphilis, which he has named *Spirochæta pertenuis*.

**Treatment.**—Salvarsan has been found to be a specific in yaws. Local mild parasitocides, and quinin, iron, and strychnin, are used with good effect.

## EPITHELIOMA

*Synonyms.*—Epithelial cancer; Carcinoma epitheliale; Rodent ulcer.

**Definition.**—Epithelioma is a chronic, progressive new-growth having its origin in the epithelium of cutaneous or mucous structures, and exhibiting a destructive or ulcerative tendency.

**Symptoms.**—Nearly all cases of epithelioma may be classified under three varieties: the superficial, deep, and papillary epithelioma.

*Superficial Epithelioma (Flat or Discoid Variety).*—The early lesions present varied clinical appearances, according to the anatomic structure whence they spring. They make their appearance as one or more grouped, yellowish, reddish, or pearly papules, or as flat infiltrations, warty outgrowths, or degenerative seborrheic patches. These show a tendency to become excoriated and covered with reddish, brownish, or yellowish crusts. When the crust is removed, bleeding takes place and a new serosanguineous crust is formed. In the course of several months or years the deposit increases, or new lesions, which undergo degeneration, with the formation of superficial ulcers, appear.

The ulcer is usually roundish, with a sharply defined, rounded, indurated, pearly edge. Often waxy-looking papules stud the border. The base is hard, reddish, uneven, easily disposed to bleed, and secretes a scanty yellowish fluid. Spreading takes place both upon the periphery and into the deeper structures. When scraped with a curet, the border and base are found to be extremely friable.

This form of epithelioma is found chiefly upon the face, although it may appear upon the neck, scalp, trunk, or hands. It may remain for many years without causing lymphatic involvement or impairing the general health. Usually there is but slight pain.

**Rodent ulcer** is a term applied to a form of epithelioma having rather distinct clinical features. It commonly has its origin in a soft brownish tubercle that has existed for a long time upon the face. Ulceration takes place and progresses into the depth, causing a considerable excavation of tissue. In untreated cases great destruction may occur, the bones even becoming involved ultimately. A rodent ulcer does not build up a neoplasm, but rather eats out and destroys. The favorite seat is about the eyelids, nose, and temples.



Fig. 175.—Superficial epithelioma of the nose.

*Deep-seated Epithelioma (Nodular or Infiltrating Variety).*—This form develops from the superficial variety or from a nodule having its seat in the corium and subcutaneous tissue. It



Fig. 176.—Rodent ulcer (epithelioma) of nose. Characteristic pearly border.

may also develop from the extension of a cancer from a neighboring mucous membrane. The nodule is pea- to walnut-sized, firm, indurated, rounded or flat, shining, and of a reddish or purplish color. After a lapse of some months ulceration takes place. The ulcer is deep, rounded, or irregular in shape, with an uneven, reddened, easily bleeding base, and hard, everted, waxy, or purplish edges. An areola of redness and infiltration indicates the spreading border. This form of epithelioma runs a much more rapid course than the superficial form.



Fig. 177.—Nodular epithelioma.

The lymphatic glands become involved, the pain is severe and of a lancinating character, and the patient slowly succumbs through marasmus, hemorrhage, or exhaustion.

**Papillary Epithelioma.**—This form may develop from the superficial or deep variety or from an ordinary wart. It appears either as a pea- to finger-nail-sized verrucous elevation, or a larger, coin-sized, lobulated, spongy, papillary growth. The surface may be dry and covered with horny yellow scales, or moist and covered with uneven, exuberant granulations secret-

ing a sanguineous or translucent fluid. Disintegration occurs, with the production, first, of fissures and, later, of ulcers. The course is progressive and, as a rule, malignant.



Fig. 178.—Deep-seated epithelioma having its origin on the buccal mucous membrane. Fatal termination.

Epithelioma involves with predilection the face, particularly the lower lip, eyelids, and nose. The penis, labia, and other



Fig. 179.—Deep-seated epithelioma.

parts of the body are not infrequently affected. The papillary variety occurs most frequently . . . skin and

mucous membranes. It is also occasionally seen upon the back of the hand.

**Etiology.**—The cause of cutaneous cancer is, like the entire question of the origin of neoplasms, involved in obscurity. Accumulated experience points strongly toward continuous or frequently repeated irritation as the most important factor in the production of epithelioma. Cancer of the lower lip is almost exclusively a disease of males, because pipe-smoking is largely limited to that sex. The friction of a jagged tooth against the tongue, the continued pinching of eye-glasses, and like causes may evoke the development of an epithelioma. Chemic rays of light are certainly a factor in the production



Fig. 180.—Epithelioma of crateriform type.

of many skin cancers, particularly those which begin as keratoses. Skin cancer is far more common on the face and hands—parts exposed to light—than elsewhere. Cancer of the skin of the face in negroes is extremely rare. Among about 3000 negroes with skin diseases I have seen a facial cancer only once, and this was in a mulatto woman. The dark pigment acts as a protective barrier against the irritative actinic rays of light. *x*-Ray cancers are produced perhaps in an analogous manner. Cancer of the skin is not rare in those who work in tar and crude paraffin for many years. The long-continued ingestion of arsenic may, in rare instances, lead to the development of multiple skin cancer. Skin cancers most commonly occur after middle age;

it is not rare, however, to observe small, superficial, pearly epitheliomata in comparatively young persons. I have seen epithelioma in three patients, aged twenty-one years, and in a girl thirteen years old in the practice of a colleague.

**Pathology.**—The essential process in epithelioma is the proliferation of epithelial cells and their extension into structures



Fig. 181.—Multiple cancer of the skin in a coal-tar worker. Patient has scores of small epitheliomata on arms.

not normally the seat of these cells. Epithelioma cutis must have its origin in the epithelium of the epidermis or in the epithelial lining of glandular structures in the skin. In many cases the process consists of an abnormal downgrowth into the corium of the interpapillary projections of the rete mucosum, a proliferation of the rete cells, and their isolation in the corium in the form of nests. In the center of these nests "pearly bodies" are commonly found. Epithelioma may also spring from the wall of a hair-follicle or from the epithelium of sebaceous or sweat-glands. Secondary inflammatory changes in the skin follow.

**Diagnosis.**—Epithelioma may be confounded with *warts*, the *ulcerating tubercular syphiloderm*, and *lupus vulgaris*.



The age of the patient, the occurrence of ulceration, the general appearance of the growth, and the course will usually enable one to distinguish epithelioma from a wart.

From syphiloderm, epithelioma may be differentiated as follows:

| EPITHELIOMA.   | TUBERCULAR ULCERATING<br>SYPHILID.  |
|--|---|
| 1. Occurs in late life.                              | 1. Occurs usually in middle and early life.                                 |
| 2. History, perhaps, of chronic irritation.          | 2. History of early and concomitant signs of syphilis.                      |
| 3. Evolution slow.                                   | 3. Evolution rapid.   |
| 4. Ulceration single.                                | 4. Ulceration usually multiple.   |
| 5. Edges of ulcer hard and pearly. Discharge scanty. | 5. Edges of ulcer not indurated. Discharge abundant, yellowish, and creamy. |
| 6. Lancinating pain.                                 | 6. No pain.   |
| 7. Yields only to destructive measures.              | 7. Heals under the use of iodids and mercury.                               |

The differential diagnosis from lupus vulgaris will be found under that disease.

**Prognosis.**—The superficial form resulting from seborrheic degeneration may be permanently cured by early and thorough destruction. In some of the other forms the prognosis is more grave, and will depend upon the age of the patient, the extent of the disease, the rapidity of the process, and the existence of glandular enlargement. Cancers of mucous membranes run a particularly malignant course.

**Treatment.**—No internal remedies have any influence upon epithelioma. The only means of curing the process is by removing or destroying the growth. Most surgeons regard excision as the best, if not the exclusive, course to pursue.

In deep growths, in those associated with glandular enlargement, and in those situated upon the lip or some other mucous surface, there can be no question as to the wisdom of employing the knife. There are many superficial growths, however, in which it is entirely unnecessary to use such heroic treatment: not only can these epitheliomata be cured without the use of the knife, but the resultant cosmetic effect is much better when treated by other means. The freedom from recurrence is no greater after surgical ablation than after other treatments to be described. There are many aged and timid persons who will shrink from the use of the knife, but who will gladly submit to treatment by other means.

For small superficial growths one of the most efficacious and rapid methods of treatment is *erosion with a dermal curet*. This can be accomplished in a minute, and almost without pain; if desired, local anesthesia by the injection of eucain may be employed. After curetting, the area is cauterized with the stick of nitrate of silver; this stops bleeding and seals the wound with a coagulum. When the process is deeper, a *pyrogallie-acid* ointment is applied:

R. Acidi pyrogallici..... ʒj-ij;  
 Cerati resinæ..... ʒiij.—M.  
 Sig.—Apply on muslin.

This ointment, which is a slow and practically painless caustic, may be used on ulcerated epitheliomata without previous curetting. A black slough is produced in a few days, which is removed by moist fomentations; the ointment is then reapplied if necessary.

*Arsenic* has long been highly prized as a caustic for cutaneous cancer. It exerts a selective destructive effect upon diseased cells. Its disadvantage is the severe pain that it causes, often requiring the use of an anodyne. On account of the possibility of absorption it should not be applied over an area more than one inch square. It acts best upon ulcerated surfaces; when the overlying skin is unbroken, its use should be preceded by curetting. The following formula is frequently used:

R. Pulv. acidi arseniosi (arsenic trioxid)..... ʒij-iiij;  
 Pulv. acaciæ..... ʒiij.—M.

Make into a paste with a saturated solution of cocain, and apply to the affected part, covering the same with a single thickness of gauze. Allow it to remain for twelve to twenty-four hours, according to the endurance of the patient and the degree of destructive effect produced. Considerable edema occurs, particularly if the growth is located near the eyelids.

*Caustic potash* is a valuable but powerful caustic, and must be used with great care. It readily permeates tissues, both diseased and sound, and destroys more deeply than is expected. When scarring is not a matter of moment and rapid destruction of a growth is desired, **caustic potash** may be used. It acts in a minute or two, **producing a soft black necrotic mass**. Its use is extremely **painful**.  
 After  
 area to be treated

cauterization, neutralization should be effected with compresses saturated with vinegar.

*Electrocautery* and *thermocautery* are of great value in treating small epitheliomatous growths, particularly when circumscribed and elevated.

The *x-rays* and *radium* have within recent years been extensively employed in the treatment of epithelioma, with most gratifying results. This treatment is detailed in the special chapter devoted to Radiotherapy.

#### MULTIPLE BENIGN CYSTIC EPITHELIOMA

Under the above title Fordyce classifies many of the cases formerly recorded as instances of epithelioma adenoides cysticum, syringocystadenoma, hydradenomes eruptifs, etc. The disease is most commonly seen upon the face, although it may occur also on the neck and upper portion of the trunk. The



Fig. 182.—Multiple benign cystic epithelioma. Moderate-sized ulcerating lesion on forehead—a score or more of scattered pin-head-sized growths on the face.

lesions consist of pin-head-to pea-sized, pearly, pinkish, reddish, or pale-yellow tumors. They are tense, shining, oval or round, and painless to the touch. The number varies from two or three to a score or more. They are usually discretely scattered, but occasionally neighboring lesions may run together. They slowly increase in size, reaching the size of a pea. Exceptionally they may grow larger and ulcerate, as is seen in the

accompanying illustration. The course is usually benign; the glands are not involved, and the general health is not compromised.

The growths are usually observed at or before puberty or a little later.

**Pathology.**—The tumors are derived in nearly all cases from downgrowths of the rete mucosum and from the walls of hair-follicles. Cysts are commonly formed, and colloid change is not infrequently noted.

**Treatment.**—Large tumors may be curetted or excised.

## PAGET'S DISEASE OF THE NIPPLE

*Synonym.*—Malignant papillary dermatitis.

**Definition.**—Paget's disease is a malignant affection of the nipple and areola, characterized at first by an eczematoïd process which later terminates in carcinoma of the skin and mammary gland.

**Symptoms.**—The disease attacks women, usually between the ages of forty and sixty. But one breast is, as a rule, involved, and this is usually the right breast.

In the beginning firm crusts are noted upon a reddened base. A typical case exhibits a sharply defined, red, raw,



Fig. 183.—Paget's disease of the nipple.

granulating surface, copiously exuding a clear, viscid secretion. Scattered throughout the patch are frequently seen small islets of epidermized skin; these may represent either efforts at repair or areas that have escaped destruction. This appearance is quite suggestive of the disease. Early in the course of the affection the nipple becomes retracted and surrounding induration occurs. The infiltration present has been aptly likened to the feel of a button or coin through a handkerchief. Burning, itching, and pain are present, and are usually severe. Later, in untreated cases, cancerous involvement of the skin and mammary gland takes place. Paget's disease has, in a few instances, been recorded as occurring upon the penis, scrotum, and other regions.

**Pathology.**—Under the microscope there is visible a pro-

liferation of cells of the mucous layer, with edema and vacuolation, prolongation of the rete pegs, formation of epithelial nests, dilatation of papillary blood-vessels, perivascular cell-infiltration, and loss of the superficial epiderm.

A sharp line of demarcation separates the disease tissue from the healthy border.

**Diagnosis.**—Paget's disease may be distinguished from eczema by the more advanced age of the patient, the sharp definition of the patch, the peculiar raw granular appearance, the button-like infiltration, and the course of the disease.

**Prognosis.**—If the disease is recognized before mammary cancer is developed, cure may result from properly applied measures.

**Treatment.**—If there is doubt as to the diagnosis, such remedies as are employed in eczema should be tried. When the nature of the disease is firmly established, treatment of a positive character should be employed. Caustics are not to be used, as they may cause extension of the process to the glands. The *x*-rays have been used with success by a number of dermatologists. Whenever doubt exists as to the advisability or necessity of surgical ablation, the more radical treatment had better be adopted.

## SARCOMA

*Derivation.*—Σάρξ, flesh.

**Definition.**—Sarcoma is a malignant disease, characterized by variously sized, shaped, and colored tumors, occurring in the skin and subcutaneous tissues either as primary or secondary growths.

**Symptoms.**—Sarcoma may be primary in the skin or secondary to the same process in some other organ or tissue. Several varieties are described.

**Primary melanotic sarcoma** or **melanosarcoma** is one of the most common and most malignant forms of the disease. It usually has its origin in an irritated pigmented nevus, although other pigmented patches may be the site of development. The lesion is usually single at first; it varies in size from a pea to a cherry or walnut. It is soft or firm to the touch, usually sessile, round or oval in shape, and of a bluish, brownish, or blackish color. New lesions soon develop in the neighborhood of the original growth, and later at a distance. They may remain unchanged for a considerable period; some tend

to break down and ulcerate. Visceral metastasis occurs, and a fatal termination results.

Hutchinson has described a condition under the name of *melanotic whitlow* in which there is an onychia, with pigmentation suggesting silver-nitrate stains, terminating in tumor formation and generalization of the process.

**Primary non-pigmented sarcoma** occurs both in localized and generalized form. The localized form develops commonly upon an irritated nevus or wart, and is usually encountered upon the extremities. It is firm and of normal skin tint; later it breaks down, ulcerates, and acquires the appearance of a fungoid growth.

In the generalized form the lesions are few or numerous, and usually situated upon the extremities, particularly the legs. At first they are of the color of the normal skin, with, perhaps, a reddish or bluish cast, but later are apt to become dark blue or purplish. They vary in size from a pin-head to a cherry or egg. As the disease progresses the intervening skin becomes tense, swollen, painful, and erysipelatoid in appearance. Some of the lesions may undergo ulceration. The disease is rapidly progressive and leads to metastasis in various viscera. The termination is nearly always fatal.

**Idiopathic multiple hemorrhagic sarcoma** is a form first described by Kaposi. It occurs usually in males between the ages of forty and sixty. It is preceded, upon the feet, hands, or face, by edema and itching. Later brownish, bluish, or purplish spots appear, upon which there develop raised or flat nodules varying in size. The skin of the affected part becomes infiltrated and ultimately elephantiasic in character. The disease lasts from three to five years or longer. In some instances recovery takes place.

**Multiple benign sarcoid (Boeck)** appears in typical cases as an extensive eruption of firm nodules upon the head, trunk, and extremities. The lesions are at first bright red, later yellowish or brownish, and in size vary from a hemp-seed to a bean. A tendency to peripheral spreading and central healing is exhibited. On the face the lesions have a blue center and yellow border. Under the use of arsenic, or at times without, the lesions tend to disappear. The affection is usually benign, although some cases run an unfavorable course.

**Etiology.**—We are in complete darkness as to the cause of sarcoma. It occurs at all ages, and is at times congenital.

**Pathology.**—Sarcoma is a connective-tissue growth made up of round or spindle-shaped cells. The pigmented sarcomata are regarded by many workers as, in reality, carcinomata, as they have their origin in the epithelial cells of nevi. In the multiple idiopathic pigmented sarcoma the color is due to hemorrhagic extravasation.

**Diagnosis.**—Sarcoma may be confounded with fibroma, carcinoma, mycosis fungoides, and gummata. The coloration, the course of the disease, and the microscopic appearances determine the diagnosis.

**Prognosis.**—The prognosis is always grave, most cases terminating fatally.

**Treatment.**—When lesions are single, they should be excised. When the lesions are numerous, ablation is neither feasible nor advisable. Hypodermic injections of diluted Fowler's solution in ascending doses has effected some cures. The x-rays have also done well and are certainly worthy of trial.

### GRANULOMA FUNGOIDES

**Synonyms.**—Mycosis fungoides; Inflammatory fungoid neoplasm; Lymphodermia perniciosa.

**Definition.**—A chronic, malignant disease, characterized primarily by an eruption of an urticarial, eczematoid, or lichenoid appearance, and later by ulcerating fungoid tumors.

**Symptoms.**—In the early "premycotic" or prefungoid stage the disease may manifest itself by eruptions of varied character; usually an eczematoid or lichenoid appearance is presented, although in some cases erythema, urticaria, psoriasis, or pityriasis rubra may be closely simulated. It is thus seen that in the beginning the affection has most varied forms of expression.

Commonly, the first symptom is the appearance of one or more reddish, sharply margined, round, circinate patches, either on a level with the skin or slightly elevated. The surface may be smooth, or scaly enough to suggest psoriasis. Itching is usually a pronounced symptom. The plaques vary in size, shape, and distribution. The trunk is usually first involved. The patches tend to spread upon the periphery and clear up in the center. Large circinate or gyrate lesions may thus be formed. As the disease progresses, the skin becomes more infiltrated. The lesions referred to may disappear and be

followed by new patches. This stage lasts several months to several years. Later the lesions take on a more distinctly *infiltrated* and *nodular* character. Pea-sized nodules and finger-nail- to palm-sized plaques are now seen; these are prone to assume a circinate, semilunar, or gyrate shape. They are distinctly elevated and infiltrated, and vary in color from a pinkish to a bluish red. After lasting for months or years, the fungoid stage develops.

**Fungoid Stage.**—Fungoid tumors may appear upon the patches described or rise from the healthy skin. They vary in size from a cherry to an orange, are sessile or pedunculated, reddish or normal skin tinted, and usually hemispheric. The growths are moderately firm, the overlying skin being tense and sometimes crusted. The tumors may disappear and reappear.

Finally, some undergo ulceration, producing characteristic mushroom-like growths. The trunk is first affected; later, the extremities and face. The lymphatic glands become greatly swollen.

The general health is, in the beginning, not affected, but as the disease progresses and ulceration takes place, the patient's vitality is seriously compromised and a fatal termination ultimately occurs.

**Etiology and Pathology.**—Mycosis fungoides occurs most often in corpulent men beyond the age of forty. The disease is believed to be an infectious granuloma, due, it is presumed, to a microparasite.

The microscopic picture in the tumor stage strongly resembles round-cell sarcoma. Early in the disease the presence of compact masses of multiform cells,—round, cuboidal, and irregular,—set in a delicate fibrous stroma, is characteristic.

**Diagnosis.**—The chronicity, sharp circumscription, and circinate character of the early plaques are highly suggestive, although a positive diagnosis at this time is often impossible. The proneness of the patches to undergo resorption, with subsequent reappearance, is highly diagnostic. When the tumors develop, the nature of the disease becomes clear. Eczema and psoriasis are the affections to be differentiated.

**Prognosis.**—The disease is usually fatal, although several recoveries have taken place. The affection may last many years.



**Treatment.**—The itching in the early stages is to be treated in the same manner as in eczema. From present indications the most important therapeutic remedy appears to be the use of the x-rays. In a number of cases the disease has been kept in abeyance as long as the rays were applied.

## CLASS VIII. ANOMALIES OF SECRETIONS OF GLANDS

### HYPERIDROSIS

*Derivation.*—ἵπερ, in excess; ἰδρώς, sweat. *Synonyms.*—Idrosis; Hydrosis; Ephidrosis; Sudatoria; Polydrosis; Excessive sweating.

**Definition.**—Hyperidrosis is a functional disorder of the sweat-glands characterized by an excessive secretion of sweat.

**Symptoms.**—Hyperidrosis may be generalized or localized; it may likewise be in some cases unilateral. General excessive sweating need not be discussed here, as it is usually the expression of a constitutional disturbance.

*Localized sweating* is, as a rule, symmetric, and confined to special regions, as the palms, soles, axillæ, genitalia, nose, forehead, etc. The condition is observed most typically upon the hands, which are moist, clammy, and cold; in its mild forms this is a very common affection. When more pronounced, the hands are constantly wet, and sweat may drip from the skin in droplets. This is a most annoying trouble, as gloves are rapidly ruined and patients often incapacitated for manual occupations. When the feet are affected, the skin of the soles becomes macerated and sodden. The epidermis has a whitened appearance, owing to infiltration with moisture; just above the whitened border, on the lateral surface of the foot, is a narrow, reddish, inflammatory border. The feet become extremely tender upon walking.

Excessive sweating in the axillæ is not uncommon; it is greatly increased by mental excitation. During medical examinations the sweat from the axillæ not infrequently trickles down the sides of the chest. Hyperidrosis of the feet, axillæ, and genitalia is apt to be associated with bromidrosis.

Unilateral hyperidrosis is usually seen upon the face. It is sometimes accompanied by a faint erythema.

**Etiology.**—The disease is due to a disturbance of the nervous mechanism governing the vasomotor and sweat apparatus.

Vasomotor weakness, cardiac disease, nerve lesions, etc., are the most common underlying causes. In unilateral hyperidrosis there is usually some structural nerve disease.

**Prognosis.**—Excessive sweating of the hands is a most refractory affection; when the feet are affected, the condition is frequently cured.

**Treatment.**—In general hyperidrosis constitutional remedies are to be employed—belladonna or atropin, ergot, nux vomica, mineral acids, quinin, etc. Crocker speaks highly of sulphur, given in dram doses twice daily, for both general and local sweating. For the local forms the remedies are, for the greater part, to be applied to the affected regions. Upon the palms this condition is much more refractory to treatment than upon the soles. The following will be found of great value in the treatment of sweating feet:

R. Acidi salicylici..... gr. xx-xxx;  
 Acidi borici..... ʒj;  
 Lanolini }  
 Petrolati } ..... āā ʒss.—M.

Sig.—To be rubbed in well at bedtime.

The feet ought not to be washed more than once a week. It is well also to strew boric acid in the stockings. Hebra's plan was to wrap up the feet in unguentum lithargyri (diachylon ointment), and continue the treatment for a fortnight.

Crocker recommends the use of a belladonna ointment. Immersion in a 1 per cent. solution of permanganate of potash is advocated. All these remedies will be found more efficient in sweating feet than in sweating hands.

To check sweating of the axillæ for a few hours apply a sponge soaked in very hot water.

Faradization and galvanization are sometimes of value in hyperidrosis. I have seen marked lessening of perspiration follow the long-continued use of the x-rays.

## BROMIDROSIS

*Derivation.*—*Βρῶμος*, a stench. *Synonym.*—Osmidrosis.

**Definition.**—Bromidrosis is a functional disorder of the sweat-glands, characterized by sweat secretion of an offensive odor.

**Symptoms.**—The term bromidrosis, strictly speaking, should

be applied only to that condition in which the sweat when secreted has an unnatural odor; by common acquiescence, however, bromidrosis refers also to the stinking odor, caused by decomposition of the sweat after transudation. In negroes a general malodorous sweat is more or less physiologic. It may be symptomatic, as in uremia, rheumatism, etc.

More commonly the bromidrosis is local, and limited to such localities as the feet, axillæ, and genitocrural region; it is usually associated with an excessive sudoriparous secretion. At times, although the amount of sweating may be normal, the odor is so penetrating as to unfit the sufferer for society.

**Etiology and Pathology.**—Thin has described a micro-organism, the bacterium fœtidum, in decomposing and malodorous sweat. The stockings and shoes become saturated with sweat and emit an offensive odor. Bromidrosis of the feet does not occur in those who walk barefooted. General bromidrosis may occur in hysteria, neurasthenia, gout, chronic alcoholism, etc.

**Treatment.**—In local bromidrosis the treatment is essentially that of hyperidrosis. Immersion in a 1 per cent. solution of permanganate of potash or in a 2 to 5 per cent. solution of formalin is of great value. For general bromidrosis the underlying condition must be studied and treated. I have found the internal use of carbolic acid in 1- to 3-minim doses of value. Osler cured a patient by the administration of alkalis.

### ANIDROSIS

*Derivation.*—A, privative, and ἰδρώς, sweat. *Synonym.*—Decrease or absence of sweating.

**Definition.**—A disorder of the sweat-glands characterized by diminution or suppression of sweat. Like hyperidrosis, anidrosis may be local or general.

**Symptoms.**—It may be the symptomatic expression of general disease, such as fevers, diabetes, Bright's disease, etc. It is observed in ichthyosis as a congenital condition. It may also be due to faulty innervation. There may be but slight diminution of sweat secretion or total absence.

**Treatment.**—In congenital cases nothing is of avail. In acquired cases one may employ massage, electricity, vapor and alkaline baths, etc.

## CHROMIDROSIS

*Derivation.*—Χρῶμα, color; ἰδρώς, sweat.

**Definition.**—A disorder of the sweat-glands characterized by an abnormal coloration of the sweat.

**Symptoms.**—There are two forms—idiopathic and accidental (color due to certain substances taken into the system). The color in the idiopathic form is ordinarily black or sepia. The orbital region is usually affected.

The affection occurs, as a rule, in hysteric women. At times the discoloration is self-produced.

*Red sweat* is not uncommonly seen in the axillæ, where it stains the undershirt. It is not infrequently accompanied by itching. The axillary hairs exhibit a reddish color, and are surrounded by a rough sheath, made up of bacteria in zoöglea masses. *Green sweat* may occur in copper workers, or in those who have ingested considerable quantities of this drug. *Blue sweat* has occurred from the administration of iron.

**Etiology and Pathology.**—The subjects of chromidrosis, save the red axillary form, are usually hysteric or neurasthenic women.

**Treatment.**—The treatment is based upon broad general principles. In red chromidrosis of the axillæ antiseptic soaps are indicated.

## URIDROSIS

*Derivation.*—Οὔρον, urine; ἰδρώς, sweat. *Synonym.*—Sudor urinosus.

**Definition.**—A condition characterized by the secretion, through the sweat-glands, of constituents of the urine in considerable quantity.

**Symptoms.**—The sweat normally contains small quantities of urea. In suppression of the urine, as in Bright's disease, cholera, etc., urinary products are eliminated through the sweat-glands. There is a urinous odor to the skin, and sometimes a deposition of salts in the form of minute whitish crystals upon the cutaneous surface.

## HEMATIDROSIS

*Derivation.*—Αἷμα, blood; ἰδρώς, sweat. *Synonym.*—Bloody sweat.

**Definition.**—A condition characterized by hemorrhage from the sweat-pores.

**Symptoms.**—Very rare. Occurs in young hysteric women. It may sometimes represent a vicarious menstruation. It has occasionally been encountered in the new-born.

### PHOSPHORIDROSIS

*Derivation.*—Φωσφόρος, phosphorus; ἰδρώς, sweat.

**Definition.**—A rare condition, characterized by phosphorescent sweat. Has been observed after the ingestion of phosphorus and of fish, but is probably due to a species of photobacterium. Koster observed a patient whose body linen became phosphorescent after violent exercise.

### GRANULOSIS RUBRA NASI

In 1901 Jadassohn described, under this title, seven cases of a peculiar affection of the nose occurring in children. Upon a more or less defined area of redness upon the tip and sides of the nose there are studded, numerous, pin-point- to pin-head-sized, dark-red maculopapules. These may be made to disappear under pressure, unlike lupus nodules, which they otherwise resemble. The eruption is usually limited to the nose, but may rarely occur upon the upper lip and cheeks. Between the lesions the skin is moist and covered with droplets of perspiration. Indeed, hyperidrosis of the nose is a pretty constant accompaniment of the disease. The patients were all children under the age of sixteen; many of them suffered from cold extremities, evidencing poor peripheral circulation. The disease lasts for years. Microscopically, the sweat-glands are implicated in the process.

### HYDROCYSTOMA

*Derivation.*—Ἰδρώς, sweat.

**Definition.**—A condition characterized by the formation, upon the face, of firm, discrete, translucent, pin-head- to split-pea-sized, deep-seated vesicles. This affection has been carefully studied and described by A. R. Robinson.

**Symptoms.**—The lesions are usually confined to the face, especially the nose and cheeks, although they may occasionally appear upon the neck. They are discrete, although when numerous, closely crowded together. They vary in number from half a dozen to a hundred or more. The individual lesions

appear as tense, shining, translucent, obtusely rounded vesicles, varying in size from a pin-head to a pea. They are deep seated and firm to touch. Small lesions bear a resemblance to a sago grain. Larger vesicles have, upon the periphery, a faint bluish or purplish color, which is quite characteristic. Upon puncture of the vesicle a clear fluid, acid in reaction, exudes.

In their later stages, through desiccation of the contents, a whitish, milium-like appearance may be presented.

The affection is almost entirely limited to women, particularly middle-aged women. It is produced by excessive perspiration, especially in persons exposed to warm vapor; the subjects of the disorder have nearly all been washerwomen. The lesions greatly improve or disappear in the winter months, but are prone to return in the summer.

**Pathology.**—The vesicle is caused by a cystic dilatation of the sweat-duct in the corium; as the vesicle increases in size, the cyst-wall approaches the epidermis.

**Treatment.**—Those affected should avoid occupations that promote perspiration. Residence in a cool climate is eminently desirable. The results of treatment are not very brilliant. Robinson advises friction with *sapo mollis* and water, and puncturing the vesicles with a needle. Mild astringent lotions, such as the one advised for miliaria, may be used.

## SUDAMEN

*Derivation.*—L., *sudor*, sweat. *Synonym.*—Miliaria crystallina.

**Definition.**—An ephemeral eruption characterized by the formation of numerous superficial, pin-head, transparent vesicles, occurring during the course of febrile diseases.

**Symptoms.**—The eruption consists of pin-point- to pin-head-sized non-inflammatory vesicles. They have been aptly described as resembling “dew-drops.” The vesicles are discretely scattered over the trunk and neck. They contain clear contents, and are situated upon a normal skin that shows no redness whatsoever. The vesicles, which are extremely thin roofed, rupture readily and disappear in a few days, leaving behind a slight desquamation. There are no subjective symptoms. The condition occurs in general febrile disorders, accompanied by sweating, such as typhoid and typhus fever, rheumatism, septicemia, etc.

**Pathology.**—The vesicles are due to a collection of sweat

in the upper layers of the epidermis, as a result of obstruction of the mouth of the sweat-ducts.

**Treatment.**—The affection undergoes spontaneous involution and requires no treatment.

### MILIARIA

*Derivation.*—L., *milium*, millet. *Synonyms.*—Prickly heat; Lichen tropicus; Red gum; Strophulus.

**Definition.**—A mild inflammatory affection characterized by discrete but closely set, pin-point- to pin-head-sized papules and vesicles occurring at the mouths of the sweat-ducts, and accompanied by itching and burning.

**Symptomatology.**—Miliaria is essentially, although not exclusively, a disease occurring during the hot season. The eruption appears suddenly, usually after pronounced physical exertion, the ingestion of hot beverages, or some other cause provocative of sweating. The patient experiences a feeling of heat and itching over parts of or the entire trunk. On inspection, the skin exhibits great numbers of discrete but closely studded, pin-point- to pin-head-sized, reddish papules (*miliaria papulosa*). The papules are surrounded by a reddish halo. The summits of many—indeed, at times, of most—of the papules are capped with small vesicles containing a clear fluid (*miliaria vesiculosa*). In a few days the serum becomes milky or yellowish-white. The vesicles show no tendency to rupture.

When the eruption is copious, the inflammatory zone around the lesions gives the skin an appearance of generalized redness; this has led to the designation *miliaria rubra*. The eruption appears in crops, and the duration of the affection depends upon the frequency of repetition of the outbreaks. At times the eruption consists of but one crop, and the affection then lasts about a week. The recurrence of crops may perpetuate the disorder throughout the entire summer. The advent of cool weather or removal to a colder climate produces a rapid disappearance of the eruption. In children, particularly in the summer months, miliaria is very prone to be complicated by the development of furuncles. Marked burning and itching are usually complained of.

**Etiology and Pathology.**—The eruption is caused by free perspiration as a result of exposure to heat, the use of hot drinks, particularly alcoholic beverages, violent exertion,

vapor baths, excessive clothing, etc. I believe that intestinal disorders, with absorption of toxic products, is often an important factor; I have not infrequently seen miliaria in the winter months, apparently from the elimination of irritating substances through the sweat-ducts.

Under the microscope minute sweat-cysts are seen scattered throughout the epidermis. Some investigators believe these to be due to obstruction of the sweat-ducts, but Török concludes that the process is inflammatory and due to the irritation of the sweat on the surface.

**Diagnosis.**—Miliaria may be distinguished from *eczema* by the sudden, profuse outbreak of the eruption following sweating, by the discreteness and absence of coalescence of the lesions, by the absence of weeping, and by the spontaneous cure under appropriate weather conditions. I have seen miliaria so abundant as to call into question the possibility of the existence of *scarlet fever*.

**Treatment.**—The prophylactic treatment of miliaria is concerned with the avoidance of those factors known to produce the disorder. Children should be lightly clad in thin woollens in summer, and should be kept in cool places, sheltered from the torrid heat. Constipation should be guarded against, as should also all intestinal disturbances.

The local treatment consists in the use of mild sedative lotions and dusting-powders. I have found the following lotion to act in an admirable manner; indeed, I know of no better combination:

R. Resorcin. )  
 Acidi borici ) .....āā 3j;  
 Glycerini..... 3j;  
 Aquæ hamamelidis..... f3j;  
 Spirit. vini rect..... f3vj;  
 Zinci oxidi..... 3ij;  
 Aquæ..... q. s. ad f5vj.—M.  
 Sig.—Sop on frequently.

Or the following dusting-powder may be used:

R. Menthol..... gr. v;  
 Acidi borici..... 3j;  
 Talci Venet..... 3j.—M.

One may sop on a saturated solution of boric acid and follow this with a dusting-powder. When the entire body is involved, bran, starch, or alkaline baths may be employed with good results. Ointments are best avoided.



## SEBORRHEA

*Derivation.*—L., *sebum*, suet; *ῥέω*, to flow. *Synonyms.*—Dandruff; Pityriasis; Ichthyosis sébacé; Eczema seborrhœicum of some authors.

**Definition.**—A disorder of the fat-producing glands, characterized by an increased, decreased, or altered secretion of sebum, producing an oily, crusted, or scaly condition upon the skin.

Considerable difficulty arises in the presentation of this subject, owing to the diverse views held as to what should be included within the designation seborrhea. Most writers, following the teachings of Hebra, describe two distinct forms—*seborrhœa oleosa* and *seborrhœa sicca* (*pityriasis simplex*).

In the former condition there is a seborrheal flux or excessive flow of sebum, while in the latter form it is assumed that there is a diminished secretion, with an exfoliation of cells. Sabouraud, whose careful researches upon this subject have attracted general attention, denies the existence of a *seborrhœa sicca*. He holds that pityriasis simplex may and does frequently coëxist with an oily seborrhea, particularly upon the scalp, but that it is a condition apart.

*Seborrhœa Oleosa.*—This form manifests itself as an inordinate oiliness of the part. Upon the scalp the hair and skin are seen to be greasy, glistening, moist, and sticky; the hair often becomes matted together. Even after thorough washing a reaccumulation of oil soon manifests itself. When the scalp is not kept clean, the fatty matter may become rancid and emit a disagreeable odor.

Upon the face, seborrhea may occur as an independent affection, or may be associated with a similar condition upon the scalp. It usually attacks the middle third of the face—the forehead, nose, chin, and adjacent portions of the cheeks. The skin is preternaturally oily, and presents a dirty, begrimed appearance, owing to the adhesion of particles of dust. The mouths of the sebaceous follicles are dilated and frequently obstructed with dark-colored plugs. Sometimes an oily secretion is seen exuding from the follicular openings. There is often an enlargement of the superficial blood-vessels, particularly about the alæ of the nose.

The same appearances may at times be noted in the sternal and interscapular region and elsewhere.

Acne often coëxists with oily seborrhea. Sabouraud regards the seborrhea as a necessary forerunner to the development

of acne. In the same manner this author holds that alopecia præmatura is in large part due to the organism which produces oily seborrhea.

*Seborrhæa Sicca (of Hebra).*—This is the pityriasis simplex so commonly seen upon the scalp and face. Upon the scalp it takes the form of *dandruff*, occurring as fine, branny, whitish or grayish scales. The scales are loose and drop readily from the hair to the coat-collar and shoulder covering of the patient. The scalp is usually dry and pale, although in some cases a certain degree of redness may be present. The hair is apt to be dry and lusterless and show a tendency to splitting.

When the face is affected, the regions preferred are the eyebrows, root of nose, nasolabial furrow, and beard. Commonly, a certain degree of the redness is present; when inflammatory change is clinically recognizable, the condition is included in the category of seborrheic dermatitis or eczema.

The so-called pityriasiform seborrhæa sicca may spread over the entire face.

At times *crusted forms of seborrhea* are observed upon the face, scalp, sternum, pubic region, umbilicus, or elsewhere. There is a greasy secretion of a grayish, yellowish, or brownish color, consisting of scales and dried sebaceous matter, more or less adherent to the subjacent surface. Kaposi classifies the milk-crust, or *crusta lactea*, of infants with this affection.

This variety may also occur upon the male genitalia, particularly in the balanopreputial fold. The *smegma præputii* is a normal secretion, which, as a result of decomposition, often leads to a balanitis. *Vernix caseosa* is an intra-uterine seborrhea, physiologic in character. The *seborrhæa corporis* of Duhring is considered under the head of Seborrheic Dermatitis.

**Etiology and Pathology.**—There is considerable diversity of opinion as to the cause of seborrhea. Oily seborrhea has been held to be due to such causes as digestive troubles, faulty nutrition, constipation, anemia, etc., occurring chiefly around the age of puberty. Sabouraud makes out a strong case for the pathogenicity of the microbacillus studied by him. If his conclusions are true, then oily seborrhea in various grades is almost a universal disease, for the microbacillus may be found in the sebaceous matter expressed from the nasal follicles of almost all subjects. It is possible that the general disturbances above mentioned render the skin a favorable soil for the development of this organism.

As regards the pityriasic form, many writers, including Auspitz, Piffard, McCall Anderson, Elliott, and Sabouraud, view it as an epidermic affection unrelated to the oil-glands. Unna, Elliott, Sabouraud, and others believe it to be of parasitic origin, the result of coccic infection.

**Diagnosis.**—Oily seborrhea is readily recognized by the diffuse greasy appearance of the skin and the enlarged pores. The pityriasic form may be confounded with eczema, but the absence of the inflammatory element will enable one to make the diagnosis.

**Prognosis.**—The prognosis is, generally speaking, favorable. The eruption yields to treatment, but there is a pronounced tendency to relapse. Long-standing involvement of the scalp leads to baldness.

**Treatment.**—The general treatment of seborrhea concerns itself primarily with the proper regulation of the patient's hygiene—therefore, outdoor life, exercise, bathing, etc., are to be advised. An effort should be made to correct any departure from normal activity of any organs or tissue. In view of the excellent local effects of sulphur, this remedy has been counseled as an internal medicament. Duhring advises it in the form of calcium sulphid,  $\frac{1}{3}$  of a grain, three times a day. Sabouraud has used natural sulphur waters (those of Luchon and Calles) with good effect. Cod-liver oil, iodine, phosphorus, iron, and arsenic are also recommended.

**Local Treatment.**—The indications are, first, to remove the crusts and scales, and then to use stimulating and astringent applications, with a view favorably to influence the glandular secretions.

To soften crusts upon the scalp, one may employ the following:

R. Acidi salicylici..... ʒj;  
Olei olivæ..... fʒvj. —M.

This may be followed by the use of the *tincture of green soap* to remove the epithelial débris. When the hair is greasy, the green soap is used without preliminary oiling. Care should be taken not to irritate the scalp unduly by violent friction, as these patients are often predisposed to eczema. Instead of the tincture of green soap, ordinary soap may be used, or medicated soaps containing resorcin, sulphur, and salicylic acid.

Sulphur is the most valuable remedy in seborrhea; it is to be used in ointment form:

R. Sulphur præcip..... ʒij;  
Adipis ben-oat..... ʒj.—M.

This should be rubbed into the scalp; but a small amount should be employed, as otherwise the hair will become disagreeably greasy.

For seborrhea of the scalp, I am very fond of using this pomade, in conjunction with resorcin lotions. The pomade is used two or three times a week, and on alternate nights the following lotion is applied:

R. Resorcini..... ʒij;  
Spirit. vini rect. }  
Aq. cologniensis } ..... āā fʒij.—M.  
Aquaë }

Sig.—Rub into the scalp.

One-half to one dram of glycerin may be added if the scalp becomes too dry. If a greater degree of stimulation is desired, thirty grains of  $\beta$ -naphthol should be added to the lotion,

Elliott advises the use of resorcin ointment upon the scalp.

In addition to sulphur and resorcin, the mercurials and tar are also valuable, the latter, however, being unpleasant on account of its odor and color.

One may use a mercurial ointment and lotion upon the scalp; the mercurials should not be used with sulphur:

R. Hydrarg. bichloridi..... gr. j-iiij;  
Glycerini..... fʒj;  
Spirit. myrciæ (bay-rum)..... fʒvj.—M.  
Sig.—Use on the scalp.

Thirty or forty grains of the ammoniate or nitrate of mercury may be incorporated in an ounce of benzoinated lard.

For oily or crusted seborrhea of the face ointments and lotions are employed. During the day one may use:

R. Resorcini..... ʒj;  
Acidi borici..... ʒj;  
Spirit. vini rect. }  
Aq. cologniensis } ..... āā fʒiss;  
Aquaë ..... q. s. ad fʒvj.—M.  
Sig.—Wet upon absorbent cotton and wipe affected regions.

At night-time a sulphur, resorcin, or mercurial ointment may be used. These remedies must be employed in milder strength upon the face than upon the scalp. The following formula is useful:

|                   |   |                  |
|-------------------|---|------------------|
| R. Sulph. præcip. | } | ..... āā gr. x;  |
| Resorcin.         |   |                  |
| Lanolini          | } | ..... āā ʒiv.—M. |
| Ung. aq. rosæ     |   |                  |

### ASTEATOSIS

*Derivation.*—'A, privative; *στέαρ*, fat.

**Definition.**—Asteatosis is a condition characterized by a diminution or suppression of the sebaceous secretion.

**Symptoms.**—The skin, as a result of the loss of the lubricating and softening oily secretion, is harsh, dry, and frequently desquamating. The epidermis may be thickened and fissures may develop.

Idiopathic cases are rare. The condition often accompanies psoriasis, leprosy, ichthyosis, prurigo, scleroderma, and lichen ruber. It may also result from the use of substances which deprive the skin of its natural oil, as alcohol, strong soaps, etc.

**Treatment.**—Inunctions of fatty substances.

## CLASS IX. NEUROSES OF THE SKIN

### HYPERESTHESIA

Hyperesthesia is a condition characterized by an increased sensibility of the skin. The condition may be localized or generalized, mild or severe. In well-pronounced cases the mere pressure of the clothes gives rise to great distress. Patients shrink from contact with all objects. The affection may be persistent or of short duration. Hyperesthesia may occur in various functional and organic nervous diseases, such as hysteria, leprosy, meningitis, etc.

### DERMATALGIA

*Synonyms.*—Neuralgia of the skin; Dermalgia; Rheumatism of the skin.

**Definition.**—Dermatalgia is characterized by pain in the skin, not the result of structural changes, and without contact with any object.

**Symptoms.**—The symptoms are entirely subjective. The surface of the skin is normal. The pain is spontaneous, but is increased by pressure, friction of clothing, etc. The painful sensation may be of a burning, stinging, or darting character.

Small, circumscribed areas, particularly hairy regions, are affected. The affection occurs most frequently in adult females.

**Etiology.**—Rheumatism is looked upon as causative in most cases. It may also occur in hysteria and chlorosis.

**Treatment.**—General treatment is to be directed to the cause. Locally, counterirritants and the galvanic current are of value.

*Meralgia paræsthetica* is a term given to a rare condition in which the outer lower two-thirds of the thigh, supplied by the external femoral cutaneous nerve, is the seat of disturbances of sensation. This may take the form of tingling, formication, burning, cold, tension, throbbing pain, etc. The condition is due to various causes—neuritis, alcoholism, gout, rheumatism, etc. The affection is persistent, although it is usually benefited by massage.

*Erythromelalgia*, described by Weir Mitchell, is a painful condition, affecting the terminal members of the extremities. It is characterized by a burning or neuralgic pain in the fingers and toes. One or both sides may be involved. The fingers or toes are observed to be very red, and at times somewhat swollen. Pressure or traumatism of any kind may provoke an attack of pain. The affection is probably due to structural change in the central nervous system or in the peripheral nerves. It is, as a rule, refractory to treatment. Arsenical poisoning may produce similar symptoms.

## PRURITUS

*Derivation.*—L., *prurire*, to itch.

**Definition.**—Pruritus is a functional cutaneous disease characterized by itching, without structural alteration of the skin. There are many diseases of the skin which are accompanied by more or less severe itching, particularly eczema, scabies, urticaria, and lichen planus. The itching referred to here is the essential feature of the disease, and is unassociated with any primary cutaneous efflorescence.

**Symptoms.**—The disturbed sensation may partake of the character of itching, tickling, pricking, crawling, tingling, etc.

The intensity of the itching varies greatly; at times it is slight, and the attack is of short duration. In other instances it may be so severe and unremitting as to render the life of the patient miserable. Indeed, persons have been known to attempt self-destruction rather than bear a suffering more unendurable than pain.

In most instances the itching comes on in paroxysms, but in the worst cases the intervening periods of freedom are extremely brief. The maximum intensity of itching is usually at night, and the slumber of the patient is often seriously compromised.

The sufferer is invariably prompted to scratch and rub the affected parts, for this manipulation, at least, purchases temporary relief. As a result of long-continued and frequently repeated scratching and friction, excoriations, papules, and thickening of the skin result. An eczema is not infrequently produced which masks the underlying condition.

When the itching is generalized, it is termed *pruritus universalis*, although the disturbed sensation seldom affects the entire integumentary surface. Generalized itching is most frequently encountered in the aged, in whom beginning senile changes in the skin are observed (*pruritus senilis*).

Itching is often confined to a single locality. The most common regions are the genitalia and anus, although the palms, the soles, face, nape of the neck, and other areas may be affected.

In *pruritus ani*, a not uncommon condition, the itching is localized to the mucous and cutaneous surfaces of the anus. The itching may be intense, and the parts may become the seat of an eczema by reason of the scratching. This is occasionally associated with *pruritus scroti*, or the latter condition may occur independently. The scrotum and the perineum are the seat of the pruritus, which may be distressing in its severity. Abrasions and excoriations are usually present, and considerable eczematous infiltration of the skin may result.

*Pruritus vulvæ* represents the corresponding condition in the female sex. The scratching and consequent pleasurable relief obtained may lead to the development of obnoxious practices.

Duhring has called attention to a form of itching occurring in the cold months of the year—*pruritus hiemalis*, or winter itch. The itching is usually confined to the lower extremities; it is worse at night-time, when the patient disrobes. It com-

monly persists throughout the winter months, disappearing in the spring, although, in some cases, it ceases after lasting a few weeks. There are usually yearly recurrences.

Some persons suffer an itching of the skin after bathing (*bath pruritus*). The pruritus lasts from a few minutes to a half-hour. Young adults with dry skin are most subject to this disturbance.

**Etiology.**—Pruritus may be caused by functional or organic nervous diseases, or through nutritive and metabolic disorders exerting a secondary influence upon the sensory nerves. There is developed a great hypersensitiveness of the cutaneous nerves.

Among the most important causes of generalized itching are the various psychic neuroses, neurasthenia, diabetes, cholemia, lithemia and the uric-acid diathesis, Bright's disease, utero-ovarian disorders, constipation, digestive and liver troubles, pregnancy, etc. The excessive use of tobacco, coffee, tea, alcohol, opium, etc., may be causative. In senile pruritus degenerative changes in the skin are probably responsible for the condition.

The condition of the liver should always be determined when generalized pruritus exists. I observed a case of generalized severe itching of three years' duration, with bile acids and pigment in the urine, but without discoloration of the skin. Later the patient developed jaundice.

Pruritus ani may have its origin in such local causes as hemorrhoids, fissures, fistula, intestinal worms, or may be due to constipation, lithemia, etc. Pruritus scroti occurs commonly in tailors, who sit with crossed legs; it may be reflexly caused by a vesical calculus or urethral stricture. Pruritus vulvæ is common in diabetic subjects, but may also result from uterine disease, pregnancy, and from leukorrheal and other discharges. Long-continued itching from eczema, pediculosis, and other causes may develop the pruritic habit, so that the itching persists, although the primary cause be cured. Pruritus hiemalis is due to the action of cold upon the peripheral nerves.

**Diagnosis.**—The diagnosis of generalized pruritus is more often made than is warranted; the itching is often discovered subsequently to be caused by pediculosis, urticaria, or a mild eczema. All these affections must, therefore, be carefully excluded before the diagnosis of pruritus is established. Difficulty will at times arise from the presence of eczematoid



lesions from scratching; it is important to determine whether the itching has antedated the appearance of these.

**Prognosis.**—This depends upon the removability of the underlying cause. Although the disease is usually obstinate, many cases can be cured, and nearly all can be given a considerable measure of relief.

**Treatment.**—The internal treatment must largely be guided by the detection of the disorders believed to bear an etiologic relationship to the pruritus. Constipation, digestive disorders, hepatic disease, diabetes, lithemia, nervous debility, etc., must receive special treatment. In some cases no flagrant deviation from health will be discovered. In these patients the treatment must be more or less empiric. I have seen good results from the administration of the tincture of cannabis indica in ascending doses, beginning with five to ten minims. The tincture of gelsemium may be employed in the same dosage. Salicylate of soda, carbolic acid, phenacetin, antipyrin, bromids, chloral, and valerian have all been recommended. Opium should be avoided.

Woolen undergarments should not be worn, as they often excite itching.

*Local applications* give a large measure of relief, and are of great importance in the treatment. Warm soda baths, containing four to five ounces of washing-soda to twenty gallons of water, are often grateful to the patient. A pound of starch added makes the bath more soothing. Baths should be taken immediately upon retiring. When the skin is dry and scaly, ointments are indicated rather than lotions. The following has, in my experience, proved generally useful:

R. Menthol..... gr. x-xx;  
Pulv. camphoræ..... gr. xx-xxx;  
Acidi phenici..... gr. xx-xxx;  
Adipis benzoat..... ʒij.—M.

Bulkley advises a salve containing chloral and camphor:

R. Chloralis }  
Camphoræ }..... āā ʒss-j;  
Ung. aq. rosæ..... ʒj.—M.

Bronson counsels the use of the following oil:

R. Acidi phenici..... ʒj;  
Liq. potassæ..... fʒj;  
Olei lini..... fʒj.—M.

In generalized itching lotions will usually be found preferable to ointments, as they are far more cleanly. A combination which has given me excellent results is the following:

|  |                     |
|--|---------------------|
| R. Acidi phenici.....  | 3j;                 |
| Liq. carbonis detergentis<br>(tincture of mineral tar) ..... | f3j-ij;             |
| Glycerini.....   | 3j;                 |
| Pulv. zinci oxidi.....                                       | 3ij;                |
| Aquæ.....  | q. s. ad f3viij.—M. |

In other cases, particularly where there are no scratch abrasions, the following will be found most useful:

|                        |                     |
|------------------------|---------------------|
| R. Menthol.....        | gr. xx;             |
| Pulv. camphoræ.....    | gr. xl;             |
| Acidi phenici.....     | f3j;                |
| Aq. hamamelidis.....   | f3j;                |
| Glycerini.....         | f3ij;               |
| Spirit. vini rect..... | f3ij;               |
| Aquæ.....              | q. s. ad f3viij.—M. |

Crocker advises a thymol lotion made up as follows:

|                   |            |
|-------------------|------------|
| R. Thymol.....    | 3ij;       |
| Liq. potassæ..... | f3j;       |
| Glycerini.....    | f3ij;      |
| Aquæ.....         | f3viij.—M. |

Cider vinegar has been advocated as a local application.

Numberless applications have been used in *pruritus ani*. Care must be taken not to use too strong remedies, particularly if a tendency to eczema be present. The ointment that has given me better results than any other contains the following ingredients:

|                       |                  |
|-----------------------|------------------|
| R. Acidi phenici..... | gr. x-xv;        |
| Picis liquidæ.....    | f3j;             |
| Lanolini              | }.....āā 3iv.—M. |
| Ung. aq. rosæ }       |                  |

Some patients object to the tar on account of the discoloration of the undergarments. The mercurials are often valuable, and may be used in combination with cocain as follows:

|                              |         |
|------------------------------|---------|
| R. Cocain. hydrochlorat..... | gr. x;  |
| Hydrarg. chlor. mit.....     | gr. xx; |
| Ung. aq. rosæ.....           | 3j.—M.  |

Care must be taken that the cocain habit is not acquired.

Living long ago advised the use of morphin and bismuth:

R. Morphinae hydrochlorat..... gr. ij;  
 Bismuth. nitratis..... ʒi;  
 Ung. aq. rosæ..... ʒj.—M.

Liquids are more cleanly to apply, and often give relief. I have seen some good results from a 1 : 1000 solution of bichlorid of mercury. The compound tincture of benzoin is also at times valuable. Some writers have claimed good results from painting with nitrate of silver (argenteum nitratis, gr. xv; spiritus ætheris nitrosi, fʒj). Bathing with very hot water will give temporary relief during severe attacks of itching.

Adler advises rectal injections of:

R. Fluidext. hamamelidis..... fʒj;  
 Fluidext. ergot..... fʒij;  
 Fluidext. hydrastis..... fʒij;  
 Tinct. benzoin. comp..... fʒij;  
 Ol. olivæ carbolat..... fʒj.—M.

Sig.—Inject one to two drams daily.

In *pruritus scroti* and *vulvæ* the same remedies as advised in *pruritus ani* may be used. In the first-named condition the wearing of a well-fitting suspensory sometimes gives relief.

In obstinate cases of *pruritus ani*, *scroti*, and *vulvæ* I have obtained brilliant results from the use of the x-rays, as have some other writers. A few treatments will often give great relief. The rays should not be used upon the scrotum except in elderly persons, in whom the destruction of spermatozoa is a matter of indifference. High-frequency currents are also beneficial in these localized forms of pruritus.

In *pruritus hiemalis* the use of linen or silk underwear is advised. A sojourn in a warmer climate is, of course, advantageous.

### ANESTHESIA

Anesthesia is characterized by impairment or entire loss of cutaneous sensibility. It is usually circumscribed, and is observed in functional and organic nerve diseases. It is a characteristic feature of anesthetic leprosy. Anesthesia is a condition which comes much more frequently within the domain of neurology than of cutaneous medicine.

## DISEASES OF THE MUCOUS MEMBRANES

## LEUKOKERATOSIS BUCCALIS

*Synonyms.*—Leukoplakia buccalis; Leukoma; Leukoplasia.

**Definition.**—Leukokeratosis buccalis is a disease of the mucous membrane of the mouth, more particularly of the tongue, characterized by the formation of whitish patches, running a chronic course, and sometimes terminating in epithelioma.

**Symptoms.**—The disease begins insidiously as a reddish patch or patches, often unobserved by the patient. After a duration of weeks or months, attention is attracted to the presence of whitish or bluish-white discoloration of the mucous membrane of the tongue in roundish, oval, or irregular patches. The border of the affected area is fairly well defined. The surface of the patch is commonly dry and rough, exhibiting a thickening of the epithelial covering. On spontaneous or forcible removal of the thickened epithelium a smooth, red, sensitive, and, at times, bleeding surface is left.

As the disease progresses the patches extend in dimensions, and a greater degree of hypertrophy of the superficial layers of the tongue takes place.

The process may be limited to small circumscribed foci, or a considerable area of the tongue may be affected. Patches or trails of leukokeratosis are commonly observed upon the mucous lining of the cheeks, particularly along the interdental line. The mucous membrane of the lip is also frequently involved; occasionally patches are seen upon the gums.

The horny layer may become greatly thickened and exhibit a frayed or loosened edge, which the patient is tempted to detach with the teeth. Fissures and furrows may develop, giving the tongue somewhat the appearance of the cerebral convolutions. At times hypertrophy of the papillæ takes place, with the production of a circumscribed or diffuse warty appearance. Firm nodulations or ulcers may ultimately form. It is from the warty, nodular, and ulcerative lesions that secondary cancer of the tongue originates.

In rare cases leukokeratosis has been noted about the vulva and on the glans penis.

The *subjective* symptoms experienced in mouth lesions are sensitiveness, and pain upon the ingestion of acids, sweets, and hot or cold beverages.

**Etiology and Pathology.**—The affection is seen almost exclusively in the male sex, and after the age of thirty. Syphilis has been accused of being the most important etiologic factor. Perhaps the causative influence of syphilis has been exaggerated. In my experience smoking and the gouty diathesis have been the most potent etiologic factors. Other influences invoked as playing a causal rôle are the use of alcoholic beverages and highly seasoned food, gastro-intestinal disorders, the irritation of rough teeth or plates, etc.

Microscopically, there is noted an inflammatory cell-infiltration in the papillary layer, hyperplasia of the rete, and



Fig. 184.—Leukokeratosis of the tongue. Subsequently a carcinoma developed, terminating fatally.

hyperkeratosis of the epithelium. Malignant changes result from the downgrowth of epithelial cells.

**Prognosis.**—The condition is, as a rule, obstinate, but some cases get well. The liability to ultimate malignant change must always be remembered.

**Treatment.**—Antisyphilitic treatment in the vast majority of cases is of no avail. The use of tobacco must be interdicted. I have seen patches disappear after the cessation of smoking, reappear upon resumption of tobacco, and again disappear upon its withdrawal. Condiments, highly seasoned foods, alcoholic drinks, and hot beverages should be avoided. Rough teeth or plates should be corrected, and a proper hygiene of the mouth carried out. The gouty and lithemic state and

gastro-intestinal disturbances should receive appropriate attention.

Mild mouth-washes containing such substances as salicylic acid, boric acid, bicarbonate of soda, etc., are useful. Sometimes pastils with these ingredients are to be preferred.

When cauterants are used, they should be used boldly, with the idea of destroying the affected tissues. Mild superficial caustics are apt to do harm rather than good. I am opposed to the use of the x-rays for this condition. The galvanocautery or thermocautery, acid nitrate of mercury, trichloroacetic acid, etc., have given good results. Circumscribed, rebellious, thickened patches may be excised. Upon the first evidence of malignancy surgical measures should be applied.

## **ACTINOTHERAPY, RADIOTHERAPY, OPSONOTHERAPY, AND REFRIGERATION**

### **ACTINOTHERAPY**

In 1896 Dr. Niels R. Finsen, of Copenhagen, published a report upon the use of concentrated actinic rays of light in the treatment of diseases of the skin, particularly lupus vulgaris. The therapeutic virtues of light have since been confirmed by numerous observers. Both the light from the sun and from a powerful arc-lamp may be employed, although the uncertainty attending the use of the solar rays and the equal or greater efficiency of those from the latter source have led to the almost exclusive adoption of the electric arc-lamp in the application of this treatment.

The rationale of the so-called Finsen-light treatment is based upon three propositions: (1) The property of concentrated rays of light to destroy bacteria; (2) the power of light-rays, under certain conditions, to penetrate living tissues; (3) their ability to bring about certain inflammatory structural changes.

The Finsen apparatus consists of a powerful arc-lamp armed with telescopic tubes with condensing lens of rock-crystal or quartz, between which are compartments for distilled and flowing water to absorb the heat-rays. Glass lenses cannot be employed, for they absorb too large a proportion of the actinic or chemical rays, which constitute the chief factor in the production of the therapeutic effects.

The area of cutaneous surface to be treated must be rendered anemic, so that the blood contained in the skin shall not act as a red screen and filter out the chemical rays. This is accom-



Fig. 185.—Large Finsen lamp in use at the Stetson Hospital, Philadelphia. The lamp is provided with but two telescopic tubes instead of four, as employed in Copenhagen. With the latter arrangement four patients can be treated simultaneously.

plished by the use of compressors, which consist of two rock-crystal lenses set into a frame, so that running water may flow

between them. These compressing lenses are of different sizes and shapes, which render them adaptable to different parts of the body. They are held by an attendant, or are applied firmly to the surface by means of elastic bands. The area to be treated is brought just within the focal point of the distal condensor of the tube, the light covering a surface of one-half to three-quarters of an inch. Depending upon the effect desired, the séance lasts from twenty minutes to one hour or longer. In from eight to twenty-four hours an inflammatory reaction is induced in the area treated, varying from an erythema to the production of blebs and swelling. The frequency of the treatments and their duration depend upon the nature of the disease, the extent of the cutaneous involvement, and individual susceptibility. For deep-seated conditions, such as lupus vulgaris, the séance is usually an hour or more. Other patches may be treated on consecutive days. The treated parts are covered with a boric-acid or zinc ointment, and are permitted to heal. Such areas may be treated again, if necessary, at the end of two or three weeks.

Actinotherapy has found its chief field of usefulness in *lupus vulgaris*, for this rebellious disease is caused by the presence of tubercle bacilli in the skin, and these may be destroyed by concentrated rays of light. A large percentage of the cases treated in Copenhagen has been cured by the Finsen treatment; the scars are smooth, as a rule, and the general cosmetic effect excellent. Lupus cases exhibiting much pigmentation, fibrous thickening, or involvement of the mucous membranes are distinctly less favorable. It is also difficult or impossible to treat lupus ulcerations by this means, as the necessary pressure cannot be made. These cases can be treated with better results by means of the x-rays.

*Lupus erythematosus* has likewise been treated with concentrated actinic rays, with a fair measure of success. Indeed, actinotherapy appears to give as good results in this capricious dermatosis as any other known method of treatment. The séances need not be so protracted as in lupus vulgaris, and simpler and smaller lamps may be employed. Those cases that exhibit enlargement of blood-vessels seem to be the most favorable.

*Alopecia areata* has been treated with concentrated actinic light, and a considerable portion of the cases thus treated has been cured, but it must be remembered that this affection dis-



appears under many and varied therapeutic measures, and not infrequently spontaneously. Nevertheless, the results obtained by Kromayer and others demonstrate that phototherapy is one of the most valuable methods of treatment in this disease.

*Vascular nevi* have been reported by Finsen and other observers to have been greatly improved by actinotherapy, but complete cures do not appear to have been achieved. Those cases in which the cutaneous blood-vessels are not greatly enlarged, as in the port-wine stain, give the best chances of success.

*Acne* and various subacute inflammatory dermatoses have been treated with light-rays, with alleged good results.

The small area that can be treated by the Finsen method, and consequently the large number of treatments required and the expense of operation of the apparatus, all tend to circumscribe the field of usefulness of this therapeutic procedure.

A smaller and simpler lamp than the large Finsen apparatus is the Lortet and Genoud or London Hospital type. This is an arc-lamp, shielded by a metallic jacket, through which water constantly circulates. The condensing lens is brought within two inches of the arc. The patient presses the area to be treated against the lens, which is made of various sizes and contours, so as to permit adaptation to different parts. An area of 4 or 5 cm. in diameter may be treated. With this lamp reaction, varying in degree from an erythema to bleb formation, may be produced by a thirty-minute exposure. The penetration of the chemical frequencies is, however, extremely limited. The lamp is, therefore, but poorly adapted to the treatment of deep nodules of lupus vulgaris; it is useful, however, in the treatment of alopecia areata, lupus erythematosus, and conditions in which a pronounced surface reaction is desired.

Within recent years the *mercury vapor lamp* has been used for therapeutic purposes. The light emitted from incandescent mercury vapor is exceedingly rich in blue, violet, and ultra-violet rays. The ultra-violet rays are almost completely absorbed by the enveloping glass tube.

In the "Uviol" lamp (ultra-violet light lamp), made by Schott, a glass-like material, said to be a barium-phosphate-chrome combination, is used. This is pervious to the ultra-violet frequencies. A distinct erythema may be produced by a five- to ten-minute exposure at 6 to 10 cm. The lamp

is useful wherever it is desired to produce a superficial cutaneous reaction. The degree of reactive inflammation may be pre-



Fig. 186.—London Hospital lamp in use at the Polyclinic Hospital, Philadelphia.

determined by the distance and duration of the exposure. I have found this lamp useful in the treatment of acne, alopecia areata, and certain forms of eczema.

THE ROENTGEN OR *x*-RAYS

In 1895 Professor Roentgen, of Würzburg, found that when a Crookes tube was excited by an electric current of high potential, peculiar rays were given off, which he modestly designated *x*-rays, because of their unknown character. These rays were at first employed alone for diagnostic purposes, but the accidental production of structural changes in the skin led to their trial in cutaneous diseases by Freund and Schiff, of Vienna. *x*-Ray treatment has a wide field of usefulness in cutaneous diseases, and has been accorded an important place in the therapeutics of these disorders.

*x*-Rays may be generated from an induction coil run either by a storage battery or by ordinary current from a dynamo, or a static machine may be used. In general, a coil will be found more satisfactory, as in warm, moist weather the efficiency of a static machine may be considerably impaired.

*x*-Ray tubes have different properties, depending chiefly upon the degree of vacuum in the tube. A hard tube, or one of high vacuum, offers great resistance to the passage of the electric current, and gives off rays which penetrate to considerable depth and exert but a minimal influence upon the superficial tissues. A soft tube, or one of low vacuum, on the other hand, gives off rays which do not penetrate to great depth, but exert a maximum influence upon the superficial tissues. Intermediate tubes, termed "medium soft" and "medium hard," have varying grades of penetration, proportionate to the degree of the vacuum.

Hard tubes show but little contrast in the fluoroscopic shadow between the bones and soft tissues of the hand, whereas the reverse is true of soft tubes.

Inasmuch as the therapeutic effect of the *x*-rays is proportionate to the amount of the rays absorbed by any given tissue, it is obvious that soft or medium soft tubes should be used for superficial cutaneous disorders, and hard or medium hard tubes for deep affections, such as those involving the subcutaneous tissues, lymphatic glands, or viscera. Soft tubes are more prone to set up an *x*-ray dermatitis than hard tubes. Very soft tubes give off a yellow light, which must be employed with care, as this quality of *x*-rays readily produces burns.

The dosage of the *x*-rays depends upon—(1) The amount of current run into the tube; (2) the quality of the tube; (3) the distance of the tube from the patient; (4) the duration of the séance; and (5) the frequency of the treatments.

For most cutaneous diseases, as, for instance, *acne*, a medium soft tube should be used, with no more current than is necessary to produce a quiet green light; treatment may be given twice a week at first, the frequency to be diminished later. The distance from the anticathode should be in the neighborhood of eight inches, and the duration of the treatment five to six minutes. Upon the first sign of an erythema treatment should be suspended, and not resumed until the redness has disappeared. Other approved methods of treatment for *acne* should be employed, for the fewer the number of *x-ray* treatments employed in the treatment of *acne*, the greater is the assurance of preservation of the integrity of the normal texture of the skin. The fact



Fig. 187.—Acute *x-ray* dermatitis. Patient was treated for a cancer of the buccal mucous membrane. The outer larger area shows an *x-ray* erythema with loss of hair; the smaller central patch shows a more pronounced burn where treatment was continued, the larger area then being protected by a lead screen.

should be emphasized that excessive *x-ray* irradiation may lead to atrophy of various elements of the skin, producing punctiform or stellate scarring or unnatural dryness and wrinkling. In addition disfiguring telangiectasis may be produced.

#### ACTION OF THE *x*-RAYS IN CUTANEOUS DISEASES

The mode of action of the Roentgen rays appears to be quite complex. They stimulate and alter the function and structure of living cells; doubtless, as a result of this, the vitality and resisting power of tissues are increased, and the noxious influence of bacteria prevented or the bacteria destroyed. The bactericidal properties of the *x*-rays are not due to a direct influence

upon the microorganisms themselves, but result from a stimulation of the bactericidal power of the body-cells. The anti-pyogenic influence of the *x*-rays is well established. When carried beyond the point of stimulation, the *x*-rays produce degeneration, atrophy, and necrosis. Cells of low vitality, such as tumor-cells, suffer first, and later highly specialized tissues, such as blood-vessels, hair-follicles, and the sweat- and sebaceous glands. The *x*-rays are also analgesic, and capable of lessening pain and itching.

The cutaneous diseases in which the *x*-rays have been found to be most useful are:

#### 1. New-growths:

|   |   |
|---|---|
| Epithelioma, particularly of the superficial types. | } Action chiefly due to breaking down of tumor-cells. |
| Lupus vulgaris and verrucose tuberculids.           |   |
| Sarcoma.  |   |
| Mycosis fungoides.                                  |   |
| Blastomycosis cutis.                                |   |
| Keloid and hypertrophic scars.                      |   |

#### 2. Follicular and glandular affections:

|                 |   |
|-----------------|---|
| Acne.           | } Action due, at least in part, to atrophy of the glands and follicles. |
| Sycosis.        |   |
| Hyperidrosis.   |   |
| Hypertrichosis. |   |

#### 3. Inflammatory diseases:

|                             |   |
|-----------------------------|---|
| Chronic eczema.             | } Action due to physical and chemical stimulation of cells, and promotion of absorption of inflammatory infiltrate. |
| Recurrent vesicular eczema. |   |
| Psoriasis.                  |   |
| Lichen planus, etc.         |   |

#### 4. Parasitic affections:

|                       |  |
|-----------------------|--|
| Favus.                | } Action largely due to depilation and extrusion of parasitic fungi. |
| Tinea tonsurans, etc. |  |

#### 5. Cutaneous neuroses:

|                      |  |
|----------------------|--|
| Pruritus ani.        | } Action due to analgesic influence of rays. |
| Pruritus vulvæ, etc. |  |
| Dermatalgia.         |  |



Fig. 188.—Severe lupus vulgaris of five years' duration in a young woman twenty-five years of age.



Fig. 189.—Same patient almost cured after prolonged x-ray treatment; complete cure achieved later.



Fig. 190.—Crusted epithelioma.



Fig. 191.—Same patient; growth cured by the x-rays.

The various *new-growths* may be treated vigorously, provided the surrounding healthy integument is thoroughly protected by lead masks or similar devices.

*Acne, sycosis, eczema, psoriasis*, etc., should be treated with great care, particularly when irradiation of the face is carried out.

*Hypertrichosis* is one of the most difficult of all conditions to treat, and requires the greatest degree of skill. It is obvious that, to produce an atrophy of the hair-papillæ without causing an atrophy of other elements of the dermic architecture, requires the nicest adjustment of the rays. Freund, of Vienna, effects a falling of the hair in twenty treatments, and then prevents a return of the hair by supplementary courses of treatment every four to six weeks, until a year and a half has elapsed. At the end of this time, he states, a permanent cure is effected. Most operators, however, acknowledge a percentage of failures, and the successes are often in patients in whom considerable skin atrophy has been produced. No cases of this character should be treated with x-rays unless the hirsutic growth constitutes an actual deformity.

*Favus and ring-worm of the scalp* have been successfully treated with x-rays. Sabouraud, of Paris, claims that tinea tonsurans may be cured in a much shorter period by Roentgen-ray treatment than by any other means. He effects a loss of hair over the disease area by a single exposure, the dosage being carefully determined by the use of a sensitized paper simultaneously exposed to the rays.

## RADIUM

It has long been known that salts of uranium luminesce under the influence of sunlight. In 1896 Becquerel demonstrated that uranium compounds emitted rays which penetrated ordinarily opaque media and affected photographic plates. The "uranium rays," or "Becquerel rays," have been studied by many physicists.

Uranium is largely derived from pitchblende, a complex mineral substance found in Bohemia and elsewhere. Madame Curie, working with uranium ores, obtained a radioactive substance resembling bismuth, which she designated "polonium," after the land of her nativity. Subsequently M. and Mme.



Curie discovered a stronger radioactive substance in pitchblende, which was named radium.

Radium has not yet been isolated in its pure state. It is used chiefly in the form of radium bromid or chlorid, and is commonly sold for therapeutic use in combination with barium salts.

Radium salts gradually assume color and also induce color in glass, porcelain, and other containers.



Fig. 192.—One of various methods of applying radium. The radium disc is held by a specially devised clamp on a perforated copper base.

The energy of radium is expressed in relation to that of uranium taken as a unit. Therapeutic specimens of radium vary in radioactivity from 1000 to 1,000,000.

Rutherford and others have shown that the energy given off by radium consists of three kinds of rays:  $\alpha$  (alpha) rays;  $\beta$  (beta) rays, and  $\gamma$  (gamma) rays.

1. The  $\alpha$  (alpha) rays correspond to the canal rays of Goldstein, and represent, according to Wien, positively charged particles at great velocity. The alpha rays are easily absorbed, and have the power of ionizing gases, but are not deviable.

2. The  $\beta$  (beta) rays are practically cathode rays. They are penetrating, and can be deviated by a magnetic field.



Fig. 193.—Epithelioma of nose.



Fig. 194.—Same patient cured by application of radium: fourteen treatments averaging forty minutes; distance,  $\frac{1}{4}$  to  $\frac{1}{2}$  inch; radium of 1,000,000 radioactivity.

3. The  $\gamma$  (*gamma*) rays correspond closely to *x*-rays given off by a hard tube. They are very penetrating, but are non-deviable in a magnetic field.

For therapeutic purposes the radium bromid, which is in the form of a brownish powder, is inclosed in various sized and shaped aluminum or mica-covered capsules or in glass tubes. The weaker mixtures of radium and barium are whitish in color.

The radium capsule or tube is retained by an appropriate holder in contact with or a short distance from the skin, for a period varying from twenty minutes to an hour or more. The activity of the radium and the distance greatly influence the intensity of effect. As light energy acts inversely as the square of the distance, slight differences in the distance of the radium from the skin enormously influence the grade of reaction induced.

Radium has been used in epithelioma, *nævus vasculosus*, *lupus vulgaris*, *lupus erythematosus*, *leukokeratosis buccalis*, *verruca*, etc. It has not been definitely proved that radium accomplishes more in these diseases than other approved remedies. Its action is much like that of the *x*-rays, and the same degrees of inflammatory and necrotic change may be induced. The reaction develops, as a rule, in from four days to two weeks after the treatment.

I have used radium in epithelioma with gratifying results, but only in that form of the disease curable by other means. In ordinary warts I have frequently been enabled to effect a disappearance of the growth by a single exposure of one and one-half hours with radium of 1,000,000 activity.

A great advantage of radium is the simplicity of application and its painlessness. Small epithelial cancers in the aged may be cured at home without discomfort or the use of surgical measures or of cumbersome apparatus. Another great advantage is the possibility of using radium in otherwise inaccessible cavities, such as the nose, mouth, or vagina. New therapeutic uses may be found for radium, but at the present time there is no adequate evidence to show that radium will accomplish more than will the *x*-rays.

**THE USE OF BACTERIAL INJECTIONS OR VACCINE (SO CALLED): OPSONOTHERAPY**

Metchnikoff some years ago advanced the theory that leukocytes played an important rôle in the defense of the body against bacterial invasion.

In 1902 Leishman developed a method of measuring the phagocytic activity of leukocytes; the following year Wright and Douglass proved that the leukocytes ingested and destroyed bacteria only under the influence of activating substances in the blood, to which the term "opsonins" was applied. The opsonins are presumed to act by sensitizing the bacteria and thus rendering them easy prey for the phagocytes.

The bactericidal power of the blood against certain organisms can be raised by the injection of a proper quantity of a sterilized culture of these bacteria. Many patients exhibit a vulnerability to staphylococcal invasion; it will usually be found that they suffer from a weakness of their staphylo-opsonins; this can be determined by mixing measured quantities of the serum of fresh blood with suspensions of the incriminated organism, developed in culture, and ascertaining the number of bacteria ingested by the phagocytes. By proper computation the opsonic index is obtained.

Bacterial injections may be prepared from organisms recovered from the patient (autogenous vaccines), or stock suspensions may be employed. It is important not to employ too large an initial dose: the dose may be gradually increased. Injections may be given about once a week.

The treatment is of value in furunculosis and carbunculosis, and at times in sycosis vulgaris, acne, pustular dermatitis, septic ulcers, lupus vulgaris, etc. Except in the first two conditions named the results may be characterized as uncertain; in some cases they are brilliant, and in others entirely disappointing.

*Boils.*—The treatment of boils with bacterial injections is the most scientific, rational, and, on the whole, successful of any method. One may begin with the injection of 100,000,000 staphylococcus aureus or mixed staphylococcus emulsion. Weekly injections should be given, the dose being increased until 500,000,000 or 1,000,000,000 organisms is reached. One to ten injections will usually effect a cure.

*Sycosis vulgaris* is occasionally cured by injections of staphylococci emulsions. In most instances, however, the treatment

produces merely an improvement, and other therapeutic methods must be conjoined.

In *acne* the best results are obtained by injecting the staphylococcus and the so-called acne bacillus. Many cases have been reported in which improvement or cure has been achieved, but in most cases the treatment is disappointing. It is, however, well worth a trial in obstinate cases.

Staphylococcic injections are a valuable aid in the treatment of *septic ulcers* and *pustular dermatitis*.

In *lupus vulgaris* tuberculin is a useful auxiliary to other methods of treatment, but results are too slow and uncertain to rely upon its use alone.

Time and future study will increase our knowledge of this relatively new therapy, and will enable us more accurately to estimate its value and determine its limitations.

## TREATMENT BY REFRIGERATION

### LIQUID AIR

Liquid air, which has a freezing-point of about  $185^{\circ}$  C. below zero, has been used in the treatment of certain diseases of the skin. The difficulty of obtaining and, more particularly, of preserving it has greatly restricted its use.

### CARBON DIOXID

Solid carbon dioxid was introduced by Pusey, of Chicago, as a substitute for liquid air in the treatment of diseases of the skin. The freezing-point of carbon dioxid is  $80^{\circ}$  C. below zero.

Refrigeration of the skin with carbon dioxid produces an inflammatory action varying in intensity according to the duration of contact of the freezing agent and the degree of pressure employed. The resulting traumatism may vary from an evanescent inflammatory reaction to necrosis of the tissue treated. The degree of pressure exerted determines the depth of the freezing. The most important factor in inducing the tissue changes is the duration of the refrigeration. Momentary freezing produces a mild inflammatory reaction. Five to ten seconds' freezing causes an acute but dry dermatitis; if the freezing is prolonged to twenty or thirty seconds, a severe dermatitis is occasioned, usually with the formation of a bleb, but without any visible resultant scarring.

If the refrigeration is continued for a minute, a bleb is formed and likewise a dry eschar, which upon its disappearance leaves a thin, whitish scar. The skin of infants is three or four times more sensitive than that of adults. Tissues previously treated with the  $x$ -rays or radium are also much more sensitive.

*Technic.*—Carbon dioxid in gaseous form is available in iron cylinders, such as are supplied to druggists for the carbonation of soda-water. The cylinder is best placed upon a suitably constructed stand, in a slightly oblique position, with the outlet downward. After the nozzle is screwed on, a small chamois bag is tied about it and the gas allowed slowly to enter the bag. The carbon dioxid is recovered from the bag in the form of a snow, which can then be packed by pressure in cylindric or square tubes to obtain a cohesive stick. A simple method is to empty a suede-leather glove-finger and retain it in position until a firm, solid mass is obtained, which may then be expressed. The chalk-like mass is then pared with a knife to the desired shape. In treating areas larger than the diameter of the carbon dioxid stick it is well to make the contact end rectangular so that the adjacent areas can be treated without overlapping. The pain accompanying and following the application is of a burning character, but, as a rule, it is not severe. Applications with  $\text{CO}_2$  can be repeated after all evidence of the inflammation produced has subsided.

#### THERAPEUTIC INDICATIONS

*Lupus erythematosus*, a disease notoriously obstinate, is commonly much improved, and occasionally a disappearance of the patches is effected. Under moderate pressure the application should vary, according to the thickness of the patch, between five and thirty seconds. In acute cases less vigorous methods of treatment should be employed. The vascular patches are less favorable for this procedure than the circumscribed, thickened plaques.

In *vascular nevi*, particularly those of small size, refrigeration with carbon dioxid constitutes one of the best methods of treatment. The duration of the application varies between fifteen and thirty seconds; in infants, between ten and twenty seconds. *Hypertrophic and cavernous angiomas* give much better results than flat nevi. Several applications are often necessary. The results

and not disfiguring.

say of the size of the palm of the

hand, a flattening of the growth and a lessening of the coloration are often achieved, but complete cure is rare.

*Port-wine stains* are at times benefited by this treatment. In a man under my care there was a reduction of about 50 per cent. in the intensity of the discoloration.

In *pigmented nevi* carbon dioxid constitutes the best method of treatment at our command. Even when the nevus is covered with hair, successful results are often obtained. The application in children is from ten to thirty seconds, and in adults, twenty to forty seconds. As a rule, little or no scarring is left.

*Moles* and *warts* may be removed in a similar manner.

In *senile* and *x-ray keratoses* excellent results are frequently achieved.

Refrigeration has also been employed in the treatment of *lupus vulgaris*, *epithelioma*, *circumscribed eczema*, *lichen planus*, etc., but for these conditions there are more eligible methods of treatment.

## ACUTE ERUPTIVE FEVERS

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IN this chapter are included those acute febrile diseases associated with a constant eruption, which are commonly called the "exanthemata." These disorders are characterized by their great transmissibility, and by the fact that nearly all persons are susceptible to them. The eruption is the most conspicuous feature of the disease, and the consideration of these affections in a work on diseases of the skin would seem eminently proper. In this chapter there are also described the cutaneous complications of vaccination.

### SMALL-POX

*Synonyms.*—L., *variola*; French, *La petite verole*; Ger., *Blattern* or *Pocken*; Ital., *Vajuola*.—*Derivation.*—Some writers allege that the term *variola* had its origin in the Latin *varus*, a papule, pimple, or tubercle, a word found in Pliny. Other writers, however, believe it to be derived from the word *varius*, which means spotted or variegated.

The Saxon equivalent *pocca*, meaning a bag or pouch, has given rise to the English *pock* and the German *Pocken*. Syphilis appeared in Europe about 1498, and caused some confusion of nomenclature, so that it became necessary to prefix the adjective *small* to the term *pock* or *pox*, in order to distinguish it from the great pox or syphilis. The same change was made in French phraseology, so that at the present day *variola* is designated *small-pox*, or *la petite verole*, and syphilis the *pox*, or *la verole*.

**Definition.**—Small-pox is an acute, highly contagious disorder, characterized by a prodromal febrile period lasting about three days, followed by an exanthem passing through the stages of maculopapule, vesicle, pustule, and crust, with a marked tendency to produce pits or scars. The fever declines in the early eruptive period and increases in the suppurative stage. One attack protects against subsequent infection in the vast majority of cases.

**Symptoms.**—The *period of incubation* of small-pox will usually be found to be between ten and twelve days. It may, in rare instances, be shorter or more prolonged. The period, however, is seldom less than eight days, nor longer than fourteen.

The stage of *invasion*, or *initial* stage, is usually ushered in with suddenness and with considerable violence. The earliest



symptom is commonly a more or less pronounced chill, followed by rapid rise of temperature. The fever is, ordinarily,  $103^{\circ}$  or  $104^{\circ}$  F., but may be several degrees higher. The pulse is full, tense, and accelerated, although not always proportionate to the pyrexia. Nausea and vomiting occur with great frequency, the emesis in severe small-pox continuing for several days.

Headache is the most prominent and constant among the early nervous symptoms, and is, at times, excruciating. Restlessness and insomnia are common in adults, while children are more prone to be drowsy. Convulsions occur in children with greater frequency than in any other exanthematic disease. When the temperature is very high, delirium, often violent, manifests itself. Pain in the back occurs in more than one-half of the cases, and is always diagnostically suggestive. The lumbar and sacral regions are the parts chiefly affected; the intensity of the pain is often proportionate to the severity of the small-pox, being particularly severe in hemorrhagic small-pox. General aches and pains are often complained of. Vertigo is a symptom of common occurrence, even in extremely mild attacks. It is particularly manifest when the patient assumes the vertical posture. Prostration and muscular relaxation are pronounced, particularly in severe cases. A mild initial stage is usually followed by a scant eruption; a well-marked initial stage may precede either a mild or severe cutaneous outbreak.

Peculiar *prodromal rashes* often make their appearance during the initial illness. When they develop, it is usually upon the second day of the invasive fever. They disappear ordinarily in from twenty-four to forty-eight hours. They may, however, continue several days after the appearance of the true eruption. The frequency of these rashes appears to vary in different epidemics. During the wide-spread and malignant epidemics of 1871 and 1872 they were very common. Osler observed prodromal rashes during this period in 13 per cent. of his cases. The most common type is that *resembling measles*, with which disease, indeed, it is liable to be confounded. The eruption has an irregular distribution, being at times generalized and at other times limited to certain regions of the body. It, moreover, differs from the eruption of measles in that the rash is not elevated above the level of the skin, and, therefore, scarcely appreciable to the finger passed over it. Its ephemeral character is also a differentiating feature. This *roscola vario-*

*losa*, as it has been designated, has a close analogue in the *roseola vaccinosa*, which occasionally appears about the ninth to the eleventh day of vaccination.

The *scarlatiniform* rash is less common than the measles-like eruption. It may involve a large part of the cutaneous surface, but is more apt to affect certain areas, as the thighs, inguinal regions, extensor surfaces of the extremities, and the trunk. Some authors refer to the appearance of an urticarial eruption in rare cases.

The *petechial* or *hemorrhagic* initial rash has a special predilection for certain regions of the body, which were carefully studied by Simon, of Hamburg. This writer pointed out the frequent occurrence of the eruption in the lower abdominal, inguinal, and genital regions and inner aspects of the thighs, constituting a triangle whose base traverses the neighborhood of the umbilicus (the so-called crural triangle of Simon). The "axillary triangle," including the inner aspect of the arm, axilla, and pectoral region, is also a commonly affected area. The petechial rash is also frequently seen along the lateral surface of the thorax and abdomen. The eruption consists of closely aggregated pin-point to pin-head-sized purplish or clarety spots, which are in such intimate juxtaposition as to convey the impression of a diffuse redness. Being the result of a hemorrhagic extravasation into the skin, the discoloration does not disappear upon pressure.

Occasionally an erythematopetechial rash is seen, the eruption partaking of the character of both the erythematous and hemorrhagic rashes.

The petechial eruptions may, during mild epidemics, occur in cases which later prove to be quite mild. More often, however, they are the harbingers of severe small-pox of the hemorrhagic type. The morbilliform eruptions are much more common in



Fig. 195.—Small-pox resembling measles; third day of eruption (Welch and Schamberg).

cases of varioloid, and their occurrence, therefore, may be regarded as an auspicious sign. At times, the roseolous eruption is practically the only cutaneous manifestation. These cases belong to the class commonly designated *variola sine exanthemate*, which is the most benignant form that small-pox may assume. That such cases are occasionally encountered is evident from the writings of both ancient and modern authors. In every epidemic patients are seen who give a history of exposure to small-pox and who, in due course of time, are suddenly seized with chills, followed by headache, vomiting, fever, prostration, and pain in the back. These symptoms continue for three or four days, and then subside without the development of any eruption except, perhaps, one of the prodromal rashes to which reference has been made. It is impossible to explain such cases on any other supposition than that the disease was variola without the eruption. Trousseau refers to cases observed by him in which the only symptoms characteristic of the disease were a "few pustules in the pharynx and on the pendulous veil of the palate."

*Stage of Eruption.*—The true eruption of small-pox makes its appearance with remarkable regularity on the third day of the illness, calculating from the day on which the initial chill or rigor occurred. In modified small-pox deviations from this rule may be noted. The eruption almost always appears first on the forehead and temples, near the edge of the hair, and on the wrists. Not infrequently it is seen first on the upper lip and around the mouth. It rapidly spreads to the scalp, face, neck, ears, forearms, and hands, always showing a decided preference for the cutaneous surfaces habitually exposed to the atmosphere. In the course of twenty-four hours, sometimes somewhat earlier, it extends to the body and lower extremities. It does not simultaneously affect these regions, but attacks in succession the back, arms, breast, and finally the legs and feet. In rare cases the exanthem may be first noted on the trunk and extremities.

The full complement of lesions does not make its appearance at once in any given part; the eruption continues rather to multiply for two or three days before its definite limit is reached. In modified small-pox new lesions may continue to appear for a longer period of time. Upon carefully examining the eruption it is seen that many lesions develop at the sites of hair-follicles or orifices of the sebaceous and sudorific glands.



Fig. 196.—Small-pox in an unvaccinated boy. Fourth day of the eruption.



Fig. 197.—Small-pox in an unvaccinated boy. Eighth day of the eruption.



Fig. 198.—Small-pox in an unvaccinated boy. Eleventh day of the eruption.



Fig. 199.—Small-pox in an unvaccinated boy. Showing condition after recovery.

The eruption begins as small red spots or macules, some of which may be so small and faint as to be scarcely visible, while others reach the size of a lentil-seed. The color is at first pinkish-red, later assuming a deeper tint. In many cases the lesions on the trunk and extremities present the appearance of flea-bites. The lesions gradually increase in size and number, becoming more and more prominent, so that in twenty-four hours they assume the form of elevated *papules* with a characteristic feel. The early papules, particularly about the forehead and cheeks, may be more demonstrable to the sense of touch than to the eye. They possess a peculiar induration, and convey to the finger a sensation similar to that which would be produced by grains of shot imbedded in the skin. The "shotty" feel varies in degree in different cases. Some papules are extremely hard, while others possess comparatively little induration. They are at first always discrete, but they may rapidly increase in number and become confluent, even before the vesicular stage is reached.

On the third day of the eruption or the fifth day of the disease very many of the lesions which made their appearance first will be found to contain a little clear serum. Indeed, in many patients one will be able to note, on the second day, a lesion here and there which has become vesicular in advance of the general eruption. These precocious vesicles are frequently of diagnostic import, enabling one in doubtful cases to assert the variolous nature of the disease. By the fourth or fifth day all the lesions are converted into *vesicles*. At this stage they commonly have the size and shape of a split-pea. Small vesicles are apt to be conical or acuminate, while the larger lesions have a convexly flat or hemispheric appearance. The vesicle of small-pox is extremely firm; not infrequently it feels harder to the finger than the papule from which it developed. In no other disease do the vesicles acquire such a degree of induration and hardness. The color of the vesicle is at first pinkish, the tint extending to the areola surrounding it. Later, as the fluid exudation into it increases, it assumes a peculiar opaline or pearly hue. This, with the shining and glistening surface, imparts to the vesicle a most distinctive appearance. One of the most characteristic features of the small-pox vesicle is the so-called *umbilication*. In the smaller acuminate vesicles this is seen as a minute central depression or invagination, representing, in all probability, the mouth of a hair-follicle or sweat

duct. This form of umbilication may occasionally be met with in other cutaneous diseases, when the lesions are situated at the mouths of the sebaceous or sudoriparous orifices. In the larger, pea-sized vesicles the umbilication is seen as a round, oval,



Fig. 200.—Small-pox—well-pronounced eruption in an unvaccinated girl—sixth day of eruption.

or slightly irregular indentation. In this case the depression is flatter and is probably due to the bulging of the periphery of the pock. This latter form of umbilication is of important diagnostic value, as but few other vesicular diseases produce quite the same appearance. The forearms and the backs of

the hands are, perhaps, the regions upon which umbilication is most characteristically seen. Umbilication is only observed in a certain proportion of vesicles. It is by no means a constant feature of small-pox eruption, and, indeed, is not infrequently absent altogether. This is particularly true of cases of varioloid. A form of secondary umbilication is commonly



Fig. 201.—Discrete small-pox in an unvaccinated girl. Eighth day of eruption (Welch and Schamberg).

seen during the stage of decline or desiccation, when the pustules, as a result of rupture and collapse, show a depression in the center.

If one observes closely the large clear vesicles of about the fifth or sixth day, particularly those situated on the dorsal surfaces of the hands, one can frequently discern, through the epidermal roof, something of the interior construction of the

lesions. They will be seen to be made up of compartments which are divided by vertical septa, very much like the divisions of an orange. The vertical partitions are formed by the spinning out and reticulation of the epithelial cells of the rete mucosum. This accounts for the multilocular character of the small-pox vesicle, and explains the inability to completely evacuate its contents by a single puncture. Large, fully developed vesicles frequently show at their central summit a disk of the color of yellowish serum, and around the periphery a whitish, puriform ring, looking not unlike an *arcus senilis*.

The predominance of the eruption of small-pox on the face and terminal extremities is to be accounted for by the greater vascularity of the skin in these regions. That lesions are attracted by an overfilling of the cutaneous vessels is seen in the excessive development of the eruption whenever the skin has been irritated or congested. It is a common experience to see in a discrete case of small-pox a profusion of lesions over a rectangular area in the lumbar or epigastric region, where a mustard-plaster had been applied during the initial stage for the relief of pain.

It is only when mechanical or chemical irritation is applied to the skin before the appearance of the eruption that an increase in the number of lesions is produced. I have frequently applied tincture of iodine after the appearance of the eruption without augmenting the variolous crop in the region thus treated.

*Stage of Suppuration.*—The contents of the vesicles gradually become more and more turbid as the result of the increased exudation of leukocytes until the lesions become frankly purulent. This condition is usually reached in unmodified small-pox about the sixth day of the eruption, and marks the beginning of the stage of suppuration. The pustules now in good part become large and globular, and stand out prominently from the skin. Their color varies somewhat in different cases. At times the pustules acquire a distinctly yellowish tint, not unlike the color of ordinary pus. Frequently, however, they retain, until rupture, a peculiar chalky or grayish-white hue. The reddish areola which is observed about the vesicles develops in this stage into a broader, deeper-hued, violaceous halo. Where the lesions are closely aggregated, the entire interpuscular integument becomes reddened and tumefied.

On the face and scalp, where the eruption is apt to be profuse, the redness and intumescence are so extreme as to render the



features of the patients completely unrecognizable. The eyelids, as the result of edema of the loose areola tissue, become enormously puffed and completely close the palpebral cleft, which is bathed in a puriform secretion. The patient for a time is unable to see, owing to a complete closure of the eyelids. The lips, nose, and ears are distorted, the normal contour of the face is lost, and the entire head swollen beyond human proportions. The patient presents a most revolting and loathsome appearance. Seeing the disease for the first time one is apt to be appalled by the horrible spectacle. The patient is sorely distressed by the inflammation and swelling of the scalp, inasmuch as contact with the pillow is a source of unendurable pain.

As the eruption on the body and lower extremities is later in making its appearance than that on the face, so also is it later in reaching maturation. When the lesions upon the face have become vesicular, it will be found that the efflorescence upon the trunk and extremities is still in the papular stage. In like manner the facial lesions will have advanced to pustulation by the time that the eruption on the body has become vesicular. There is noticeable, therefore, this regular multiformity in the character of the lesions upon the different portions of the body. About the eighth day the pustules on the face have reached their greatest development, and the process of retrogression then begins. They become yellowish, present a shrunken or shriveled appearance, and rupture or collapse. On rupturing the pustules give exit to a viscid, glairy, dirty-yellow pus which dries in the form of yellowish or brownish crusts. A gradual subsidence in the inflammation and swelling takes place, and the normal outlines of the face are once more restored.

During the stage of pustulation the lesions which exhibited umbilication become distended and globular, thus effacing the central depression. The epithelial bands holding down the center of the lesion in all probability become dissolved, permitting the roof of the pustule to assume a hemispheric form.

The eruption on the trunk is almost always much less abundant than on other parts of the body. Not infrequently the hypogastrum is quite free from pustules, even when the face and hands show a marked degree of confluence. Exceptions to this rule are, however, met with. I have seen patients the skin of whose body was so profusely covered that it would have been almost impossible to place the tip of the finger upon a

healthy area of skin. Of course, in such cases the danger to the patient is correspondingly increased, inasmuch as the gravity of the disease is, as a rule, directly proportionate to the extent of the eruption.

In a well-pronounced case of semiconfluent small-pox an approximate count of the number of lesions was made. This was accomplished by dividing the cutaneous surface into certain areas by means of a colored crayon, and counting the pustules within these boundaries. Upon the face and scalp the confluence of the pustules precluded the possibility of their being counted. A conservative estimate of the number present was, therefore, made.

The number of lesions computed upon the different portions of the body is herewith appended:

|   |                      |        |
|---|----------------------|--------|
| Total on fingers of one hand:           | { Thumb.....         | 61     |
|   | { Index-finger.....  | 97     |
|   | { Middle finger..... | 95     |
|   | { Ring-finger.....   | 81     |
|   | { Little finger..... | 58     |
| Total.....                              |                      | 392    |
| Dorsal surface of one hand.....         |                      | 382    |
| Palmar surface of one hand.....         |                      | 129    |
| Total lesions on both hands.....        |                      | 1,806  |
| Forearms.....                           |                      | 4,400  |
| Arms.....                               |                      | 2,840  |
| Chest.....                              |                      | 1,000  |
| Abdomen.....                            |                      | 175    |
| Thighs.....                             |                      | 4,180  |
| Legs.....                               |                      | 2,850  |
| Feet.....                               |                      | 750    |
| Back.....                               |                      | 5,700  |
| Estimated number on face and scalp..... |                      | 3,000  |
| Total.....                              |                      | 26,701 |

By evacuating some of the pustules with a pipet it was estimated that the lesions, at the height of their development, each contained about three drops of pus. Such a computation developed the surprising fact that the patient referred to carried in his skin about five quarts of pus.

I have seen larger men, with more profuse eruptions, who must have had in the neighborhood of 40,000 pustules. With this prodigious amount of purulent material in the skin, the wonder is that any patient thus afflicted should recover.

The pustules on the trunk appear to have a more superficial

seat in the skin than on cutaneous surfaces constantly exposed to the air; hence they are not accompanied by the same amount of inflammatory swelling or ulcerative destruction of the cutis. There is, moreover, very little tendency on the trunk and lower extremities to confluence of the lesions. One frequently notes a coalescence of two or three pustules as a result of their contiguity, but the vast majority of lesions remain discrete.

This statement, however, does not apply to the efflorescence *on the hands and feet*. In these regions the degree of confluence may be intense and cause the patient great suffering. As a result of the thickness of the overlying epidermis on the palms and soles, the pustules do not acquire as great a prominence as elsewhere. Being bound down by the tense and unyielding horny layer of skin, pressure is made upon the delicate underlying cutaneous nerves, producing distressing pain. In a severe attack of small-pox the palms and soles, the fingers and toes, and the dorsal surfaces of the hands and feet are profusely covered. When the pustular stage is reached, the patient becomes perfectly helpless; he is unable to feed himself or in any way utilize his hands. It is pitiful to behold him in bed, with his hands and fingers semiflexed and his arms outstretched for fear of the dreaded contact with the bed-clothing. At times the pustules on the backs of the hands fuse and produce large bullæ, or even an extensive undermining of the epidermis, similar to that seen in a severe scald.

During the suppurative stage a most penetrating and offensive odor emanates from the body of the patient and from the pus-stained bed- and body-linen. This stench results from the decomposition of the effete and purulent discharge, and is not peculiar to small-pox. In neglected cases the odor is most sickening, and may pervade the atmosphere of a room or, indeed, of an entire house.

**Eruption upon the Mucous Membranes.**—Simultaneous with the appearance of the small-pox efflorescence upon the cutaneous surface, or a little earlier, the eruption develops upon the adjacent mucous membranes. The involvement is almost exclusively confined to those mucous surfaces which are near the external orifices or to which the air has access. The eruption early attacks the lining of the mouth, nose, and pharynx, and in severe cases the larynx, bronchi, and esophagus. The extent of the exanthem bears a direct relation to the severity of the eruption of the skin. The lesions, how-

ever, are seldom as profuse upon the mucous surfaces as upon the integument. If an examination of the mouth and fauces be made at the very beginning of the eruptive stage, small yet distinct red spots may be seen upon the roof of the mouth, buccal surface, and anterior arches of the palate.

These macules are pin-head-sized and larger, and of an intense red color, which contrasts with the violaceous or bluish-red tint of the surrounding mucous membrane. In a short time the spots become slightly elevated or papular, frequently exhibiting a whitish, glistening center. The parallelism with the evolution of the cutaneous pock ceases at this stage of development. There is an effort on the part of nature toward the formation of vesicles, but the thin and delicate epithelium which serves as a covering is destroyed by the macerating influence of the moist secretion in which they are constantly bathed. As the eruption upon the skin becomes vesicular and pustular, the lesions in the mouth assume a whitish or grayish appearance, with but little if any elevation above the surface. The denudation of the epithelial covering of the pocks leads to the production of circumscribed erosions or superficial ulcerations.

The tongue is often the seat of lesions which seriously embarrass its movement in speaking and eating. Occasionally an intense form of *glossitis* is set up, causing the organ to swell so enormously as to prevent its retention wholly within the mouth. This condition, which was designated by the older writers as *glossitis variolosa*, is apt to greatly interfere with swallowing, and is under all circumstances to be regarded as an unfavorable sign.

Much annoyance is occasioned by the presence of the eruption in the *nasal cavities*. The mucous membrane is at first swollen and inflamed, and later covered with crusts which obstruct the nares and render nasal breathing difficult and often impossible.

The eruptive process may involve the *larynx* and cause so much inflammation and swelling as to make deglutition difficult or impossible, or it may lead to the production of hoarseness and complete aphonia. In severe cases an acute edema of the glottis may develop, which may seriously or even fatally impede respiration.

The mucous membranes of the lower portion of the body may also be involved. The eruption may attack the vulva

and the mucous surface of the *vagina*, but the lesions in these parts are not apt to be abundant. The lower part of the *rectal mucosa* may also be the seat of the variolous eruption. The *meatus urinarius* is occasionally involved in both males and females, but the urethral channel nearly always escapes.

**Delirium.**—During the early days of the eruption violent disturbances of cerebration in the form of delirium and acute mania may take place. Patients are frequently the subject of hallucinations and of delusion of persecution. I have seen patients at this time attempt escape through the windows of the hospital. Suicidal and homicidal attempts may be made. These mental derangements are more common among alcoholics.

**General Symptoms of the Eruptive Stage.**—In unmodified small-pox the initial fever continues high until the third or fourth day of the eruption, when there occurs a remission in the temperature or a complete drop to normal. The pulse and respiration are lessened in frequency. The pains in the head and back abate, the vomiting ceases, and the patient experiences a feeling of well-being. In modified small-pox this is often the termination of disturbing general symptoms. In *variola vera* the subsidence of the symptoms is never so complete as in *varioid*, and the respite is of but short duration. On the fifth or sixth day of the eruption, when suppuration is established, the *secondary* or *suppurative fever*, begins, continuing throughout the eruptive period and longer if complications arise. The febrile curve is lower than that of the initial stage, seldom exceeding  $104^{\circ}$  F., and usually running between  $102^{\circ}$  and  $103^{\circ}$  F., with morning falls and evening exacerbations. The duration of the fever is indefinite, varying between three or four days and several weeks. In severe cases there are great nervous apprehension, restlessness, insomnia, and prostration. At the end of the eighth or ninth day, in favorable cases, a sudden improvement sets in, coincident with the involution and drying of the pustules.

**Period of Involution and Retrogression of the Eruption.**—The exanthem of small-pox reaches the acme of its development with the completion of the pustular stage. This constitutes the turning-point not only of the eruption, but frequently of the disease. The first evidence of retrogression of the exanthem is noted in the subsidence of the inflammatory swelling of the skin, more particularly in the immediate neighborhood of the pustules. The abatement is first seen upon the

face, where the redness and edema have been most conspicuous. The eyelids become less swollen, permitting the patient to again perceive the grateful light of day. The tumefied features gradually assume their normal contour, and the patient begins to acquire some semblance of his former self. Synchronous with the disappearance of the intumescence the pustules begin to dry; this period is called, therefore, *the stage of desiccation*. The drying of the contents of the pustules is soon followed by a casting-off of crusts, when the *stage of decrustation* is entered upon. Nature in this manner attempts to rid the surface of the skin of the effete products which have there collected, and finally restore it to its normal condition.

The involution of the small-pox exanthem does not occur simultaneously upon all portions of the body surface, but follows the same sequence observed during the development of the eruption. It is but natural, therefore, that the first evidence of desiccation should be found in the facial lesions. The pustules in this region may dry without rupture, although more commonly the purulent contents of the lesions exude upon the surface and dry in the form of yellowish crusts. The color gradually becomes darker, until it assumes a brownish tint. In neglected cases the crusts may become almost black, enveloping the face in an unsightly, immovable mask. The adhesion of the crusts to the subjacent tissues varies in degree according to the depth and intensity of the involvement of the cutis. Where the pustule is superficially seated and there is no ulceration of the skin, the crust is readily detached, exposing to view merely a reddened area of the skin.

At the same time that desiccation is well established on the face, the trunk and extremities will exhibit lesions distended with fluid pus.

After the rupture of large pustules, the centers frequently dry and sink in, producing a cup-shaped depression or umbilication. This *secondary umbilication* differs from the primary variety in being distinctly larger and more conspicuous, and occurring at a much later stage of the eruption. This form of umbilication is most typically seen on the dorsal surfaces of the hands.

When the variolous pocks desiccate without rupture, they undergo a gradual condensation of structure and a fading of their color. When they are completely dried, the papillary is, and of a

layer of the skin has been affected. On the spontaneous shedding of the crusts these areas will be seen as reddish, cicatrized excavations. The extent of scarring depends entirely upon the depth to which the destructive inflammation has extended. Pocks which remain encapsuled within the epidermis will leave no permanent evidence of their presence. They will be followed by reddish stains, which are quite disfiguring in themselves, but disappear in the course of a few months. On exposure to cold the reddish discolorations acquire a bluish or purplish appearance. As time goes on the reddish color becomes darker and eventuates in a brownish *pigmentation*. This pigmentation is fortunately less conspicuous and less persistent on the face than on the covered surfaces. Even after several months the trunk and limbs frequently exhibit stains of a *café au lait* hue. In persons of swarthy complexion and in negroes the pigmentation is greater than in fairer-skinned individuals.

After the lapse of three or four months the *scars* of small-pox assume a whitish color—paler, indeed, than the surrounding integument. They may be round, oval, linear, stellate, radiate, or irregular, according to the configuration or grouping of the lesions which caused them. They may be large or small, deep or shallow; not infrequently they present sharp, overhanging edges. Indeed, there is nothing specially characteristic about the pits left after variola save their extent and distribution. Affecting most profusely and conspicuously the face, they give rise to the well-known “pock-mark” countenance. It is well to remember, however, that similar pits sometimes follow a severe acne, particularly of the necrotic type. I have seen scarred acne patients who might have passed for variola subjects. The older writers gave to acne the significant title of “stone pock.”

By a curious irony of fate nature obliterates the remains of the vast majority of variolous lesions upon the covered surfaces of the body, whereas indelible evidence is left upon the face, and frequently the hands, to bear witness to the cruel disease through which the patient has passed. Time, however, accomplishes much toward the effacement of the more superficial scars and the mitigation of the disfigurement produced by the deeper cicatrices.

The hair of the head, beard, and eyebrows, etc., may be lost after the termination of a severe small-pox, especially in cases

in which the eruption has been profuse in these areas. This *alopecia* is probably in part of febrile origin, and partly the result of the local influence of the exanthem. Restoration of the hair usually occurs, and this is complete, except in areas in which the hair-papillæ have been destroyed by the variolous lesions.

The *nails* of the fingers and the toes may be shed in severe cases. This is usually accomplished slowly through the pushing off of the old nail by the new one growing from behind. After six or eight weeks a sharp, elevated ridge is seen near the nail-fold; this represents the free border of the new nail, which in the course of time extends forward. Not infrequently variolous lesions are located beneath the nail. These *sub-ungual pocks* are of a purplish or reddish-brown color, looking not unlike traumatic ecchymoses.

**Impetigo Variolosa.**—During the period of desiccation and incrustation in small-pox certain secondary changes commonly occur upon the skin. One of these is the development of sparsely distributed blebs containing a thin, dirty-yellow fluid. These may originate in several distinct ways. They may spring up upon previously healthy inter pustular areas of skin, or they may result from a distinct conversion of the pustules into blebs. At times a pustule is seen one-half of which is still yellowish, while the other half is spreading out into a muddy-colored bleb. The blebs are commonly flat, although at times they rise prominently from the surface; they vary in size from a bean to a walnut. The epidermal roof is flaccid, wrinkled, thin, and easily disposed to rupture, when a thin, yellowish fluid exudes which dries in the form of irregular crusts. This form of bleb formation is most frequently seen on the hands and feet, where the blebs may reach the diameter of an inch or more.

A more common change in the pustules, however, is the development, around the partially desiccated crust, of a reddish, vesicular ring, containing a turbid, puriform secretion; just beyond the border of the raised epidermis is a narrow, pinkish band which indicates the spreading edge. These flat bullous patches spread peripherally, lifting up the epidermis as extension takes place, until perhaps an area the size of a silver half-dollar is reached. Central crusting proceeds concurrently with centrifugal extension. In this manner large, dirty-yellow, irregular, friable crusts are formed. It is not uncommon for most of the pustules on the trunk and extremities



surrounded by a spreading, vesicopustular ring, producing an extensive secondary eruption. Nearly all patients with unmodified small-pox present these "sores" upon the skin. Where the eruption is profuse, there may be considerable elevation of temperature and other evidences of septicemia. Indeed, this extensive secondary skin involvement may even cause death.

The various forms of pustuloblenb formation just described are so common in small-pox that this complicating condition might appropriately be designated *impetigo variolosa*. Indeed, this term was employed by Hebra for one of the forms of blenb formation above referred to. In 1867 he wrote: "In other instances a consecutive suppuration appears, not round crusts formed from variolous pustules, but in the intervening spaces which were free from the efflorescence. Thus there appears a second pustular eruption, which might also be regarded as a second small-pox eruption, were it not that the pustules have a different form and take a different course. In fact, they resemble rather those of the common pustular affections, and, therefore, this affection may be called *impetigo variolosa*." Hebra preceded this description by a reference to "central crusts with small vesicular rings containing a puriform fluid," to which he applied the name *rupia variolosa*.

Microscopic and cultural examination of the contents of variolous vesicles and pustules demonstrates that the ordinary pyogenic organisms are absent in the early stages of the lesions, but commonly appear during the late pustular period.

In a bacteriologic study of the vesicles and pustules of small-pox I found the lesions to be sterile until a late stage of the eruption. Of 34 cultures of fluid from variolous lesions before the seventh day of the eruption, 33 remained sterile. And even on the eighth, ninth, and tenth days bacteria cultivatable on ordinary media are not infrequently absent. Of a total of 82 cultures made, 64, or 77 per cent., failed to show any growth whatsoever. Frequently thick, creamy pus was deposited upon the nutrient media without giving rise to any colonies whatsoever. The results, which are in accord with most similar investigations, suggest that the *causa causans* of small-pox, which is, of course, resident in the lesions, is itself pyogenic, and that it is responsible for the suppuration of the variolous pock. Suppuration is, therefore, to be regarded as a part of the normal evolution of the eruption of small-pox. After the eighth or ninth day of the eruption, however, it would appear

that a secondary infection, with germs commonly present on the skin, takes place. At this time variolous impetigo develops. The thin, seropurulent fluid in the impetigo blebs, when examined in smear, is seen to contain myriads of microorganisms, chiefly streptococci, although staphylococci and pseudodiphtheria bacilli are also found. When death occurs in small-pox, streptococci may, in the vast majority of instances, be recovered from the heart and other internal organisms. Most of the deaths from small-pox occur from a streptococcus septicemia from the ninth to the eleventh day of the eruption.

**Secondary Toxic or Septic Rashes.**—Another secondary eruption in small-pox, to which but little reference has been made in literature, is the toxic or septic rash, which appears in a certain percentage of cases during the stage of decrustation. Between the eighth and eighteenth days, and most commonly on the thirteenth or fourteenth days, there develops upon the trunk, extremities, and at times the face, a peculiar erythematous efflorescence. In most instances the rash consists of a diffuse, dusky redness, bearing a strong resemblance to the exanthem of scarlet fever (*scarlatiniform erythema*). At times it is mottled and inclined to become somewhat morbilliform in appearance. The scarlatiniform eruption is peculiar in that the skin immediately surrounding the drying pocks is often exempt, producing a sort of anemic halo. The rash lasts for two or three days and then fades. If the erythema has been well marked, it is prone to be followed by desquamation, which may be most profuse in character. The exfoliation of the epidermis is usually rapid, and may be out of proportion to the intensity of the rash. Such cases merit the designation of *dermatitis exfoliativa variolosa*.

In rare instances these secondary rashes may become hemorrhagic. Hemic extravasation into the skin is most apt to occur upon the lower extremities, where the stasis in the vessels is greater, owing to gravity.

The secondary rashes are not infrequently accompanied by rise of temperature. The temperature may suddenly mount to 104° F., decline rapidly, and then remain for some days in the neighborhood of 101° or 102° F. In some patients, with rashes of moderate severity, no pyrexial elevation occurs. While the eruption lasts the patients are, as a rule, somnolent, extremely irritable, and considerably prostrated. The rashes are more

commonly observed in patients who have had severe small-pox eruptions. During the epidemic of 1901-03 in Philadelphia these eruptions occurred in perhaps 5 to 8 per cent. of all patients admitted. The incidence among children seemed to be greater than among adults. In the severe epidemic of small-pox of 1871-72 Wm. M. Welch informs me that such rashes were much less frequently observed. In the year 1904 they were distinctly less frequent than in the two preceding years.

The scarlatiniform eruption is the type far more commonly seen. The resemblance to the rash of scarlet fever is so strong that, in the beginning, the existence of the latter disease was suspected.

The postvariolaous rashes are, in all probability, septic or toxic in character, due doubtless to the absorption of some poison into the blood. It would seem that these are more common in patients who have been subjects of an abundant impetigo.

#### THE VARIETIES OF SMALL-POX

Variations in the extent of the eruption of small-pox may reach extreme limits, from a few small pustules, scarcely characteristic enough to enable one definitely to proclaim the variolaous nature of the disease, to the most extensive eruption, covering the entire cutaneous surface. Between these two extremes there may occur numerous grades of intermediate severity.

**Confluent Small-pox (Variola Confluens).**—Most prominent among the early symptoms of confluent small-pox are severe headache, persistent retching and vomiting, delirium, or in children stupor, violent pain in the back, and high fever. The temperature always rises rapidly and attains frequently an extraordinary height. It is not at all uncommon for the fever to reach 105° or 106° F., and cases have been recorded in which a temperature of 110° F. was registered. On the third, fourth, or fifth day of the eruption the temperature declines, but this remission is never so complete as in milder cases, nor does it continue so long.

Ordinarily, in forty-eight hours, the efflorescence covers the entire body surface. Owing to the extensive involvement of the skin, redness and swelling begin early. The face is intensely hyperemic, and the seat of distressing burning and itching. The marked suffusion of the countenance frequently enables one to prophesy that the disease will take the confluent form. As

the eruption progresses it passes through the usual stages, though somewhat more slowly than in the milder cases. The papules are thickly set, and even at this stage a coalescence of the lesions may be noted. The skin is thickened and indurated, and feels like embossed leather. Soon the grayish outlines of the vesicles make their appearance, and the confluent aspect of the exanthem becomes accentuated. With conversion of the vesicular contents into pus, great swelling and



Fig. 204.—Small-pox in an unvaccinated negro; semiconfluent on face. Eighth day of eruption (Welch and Schamberg).

edema develop, particularly about the face and scalp. The eyelids are enormously puffed, and the margin of the upper lid so greatly thickened that it completely overlaps the lower. The nose, lips, and ears are swollen and distorted, imparting to the countenance a most hideous expression. The hands and feet are swollen to double their natural size, and are most exquisitely tender and painful. When full pustulation is established, the neighboring lesions coalesce and form large, flat blebs. In severe cases the walls of the pustules are completely swept away, producing flat, purulent, pasty-looking infiltrations of enormous proportions. When the pus exudes upon the surface and dries, a most disgusting stench arises from the body.

In favorable cases, with the beginning of desiccation, a subsidence in the edema takes place, and the crusts are cast off from the skin. The decrustation is, however, slower than in the discrete and semiconfluent forms of the disease. The suppurative process is deeper and more persistent, and may lead to the consecutive production, in the same areas, of large crusts which are successively thrown off as they form. Owing

to the greater depth of the purulent inflammation in the integument, more extensive destruction of the true skin occurs, and consequently the scarring is deeper and more conspicuous. Instead of discrete pits, the face may be seamed with scars in a most frightful manner.

In severe cases which are going to terminate fatally the course pursued is rather different from that above described. The evolution of the eruption is exceedingly slow, the lesions appearing to be suppressed and accompanied by but little swelling. The face has a peculiar blurred appearance. An ominous sign in these cases is the early development of flat, brownish, depressed scabs on a few of the vesicles on the forehead and cheeks. In these suppressed eruptions the vesicles are only partially filled with fluid, and the features are only slightly swollen; the skin is roughened and presents a somewhat parchmenty appearance. There is most profound prostration, and death results in almost every case.

The constitutional symptoms during the suppurative stage of confluent variola are most pronounced. There are marked pyrexia ( $104^{\circ}$  to  $105^{\circ}$  F.), rapid pulse, frequent cough and expectoration, great restlessness, inability to sleep, and profound prostration. Delirium is very common, but the patient does not become maniacal, as he often does earlier in the disease. At this stage, also, complications are liable to occur, such as corneal ulcer, keratitis, pleurisy, empyema, suppuration of the joints, cellulitis, phlegmonous inflammation, and gangrene of the skin. Vomiting and diarrhea may supervene, and still further exhaust the patient's ebbing vitality. In fatal cases the patient sinks into a comatose condition, the pulse becomes excessively rapid, and the temperature not infrequently rises to  $105^{\circ}$ ,  $106^{\circ}$ , or  $107^{\circ}$  F.

The mortality in confluent small-pox varies in different epidemics, but it is always extremely high. In general terms it may be stated that at least one-half of such cases perish. When this form of the disease terminates in recovery, it is only after a long and tedious convalescence, interrupted by the development of boils, abscesses, and other complications.

**Hemorrhagic Small-pox.**—Of all the forms of variola, the hemorrhagic is the most formidable and malignant. For those who contract a well-marked attack of this type of the disease there is absolutely no hope.

According as the hemorrhage precedes or follows the appearance of the variolous lesions two varieties are distinguished: first, the so-called *purpura variolosa*, in which the hemorrhage is the primary exanthem, and, secondly, *variola pustulosa hæmorrhagica*, in which it comes on secondarily.

In certain epidemics a petechial eruption is frequently seen at the close of the initial stage of the disease, at or about the



Fig. 205.—Hemorrhagic small-pox in a puerperal woman; fatal. Cutaneous surface covered with petechiæ and ecchymoses. A few ill-formed papules were present (Welch and Schamberg).

time when the eruption should appear. This symptom often precedes the purpuric or hemorrhagic form of the disease, and is, therefore, as a rule, an early sign of malignancy. At other times petechiæ and ecchymoses appear between the papules and vesicles, or develop actually in the bases of these lesions. The vesicles and pustules may contain purulent material, or may fill up with sanguinopurulent fluid. Considerable diversity of appearance is sometimes manifest in the eruption of a single case.

There is no satisfactory explanation at hand to elucidate the causation of hemorrhagic small-pox. It would appear that the determining factor is largely resident in the individual, inasmuch as such cases may be derived from ordinary small-pox and, on the other hand, to the usual forms in

other people. The frequency of this form of the disease varies in different epidemics, being commonest when a more malignant type of the disease prevails.

**Variola purpurica**, or **purpura variolosa**, is the gravest and most malignant form of small-pox. The initial stage does not differ essentially from that of ordinary variola. The patient suffers from chill, fever, and headache, although the temperature is not so likely to reach so extraordinary a height as in confluent small-pox. The pain in the back is usually violent, and prostration excessive. Furthermore, the patient often suffers from precordial distress and from severe retching and vomiting. The vomiting in this form of the disease is a most distressing symptom, and commonly proves more persistent than in ordinary small-pox. It not infrequently continues for several days after the appearance of the exanthem. Toward the end of the initial stage a diffuse efflorescence appears on various parts of the trunk and extremities, while the face remains for a time exempt. The rash is at first scarlatinoid in appearance, and disappears partially under digital pressure; later it becomes more intense and of a deeper hue, and hemorrhagic extravasation into the skin occurs. Petechiæ, vibices, and ecchymoses develop upon the chest, axillæ, lower portion of the abdomen, groins, and legs; the dark-red or purplish discoloration now present no longer fades under pressure of the finger. The discoloration rapidly extends to the face, which becomes dusky red or livid and swollen. The conjunctivæ are injected, the eyes blood-shot, and the lids bluish, owing to hemorrhage into the cellular tissue. Frequently the extravasation of blood under the conjunctiva covering the sclerotica is so great as to cause this membrane to project beyond the lids like a sac filled with blood. Under such conditions the patient is unable completely to close the eyes. The cornea retains its normal transparent appearance, but, owing to the elevated conjunctiva about its periphery, appears to be sunken deeply into the eyeball. This condition, together with a dark discoloration of face and the tumefied features, gives to the patient a peculiarly unnatural expression. A close scrutiny of the skin usually reveals the presence of small, abortive vesicles, which may be almost obscured by the purplish ecchymoses upon which they may be situated. These are most apt to be found upon the forehead, axillæ, groins, or wrists. The vesicles, which are of

a plum-colored or leaden-gray tint, never develop to any extent, but remain perfectly flat. As the disease progresses the discoloration of the skin deepens on all parts of the body, giving to the integument a deep indigo hue which at times almost approaches black. In such cases it is difficult to say, judging from the skin alone, that the patient is not of African origin. Hence this form of the disease has been known as *black small-pox*, or *variola nigra*.

In this, as in other types of variola, the pharynx and upper part of the respiratory passages participate in the eruption. Purplish spots may be seen upon the gums, palate, tongue, and buccal surfaces, but the general mucous membrane is usually pale. Hemorrhages are quite certain to occur from the nose, bronchial mucous membrane, kidneys, rectum, and uterus. Vomiting of blood occurs in quite a large percentage of cases, and bloody stools are by no means infrequent. Indeed, blood may issue from any or all of the mucous surfaces of the body.

The course of this type of small-pox is extremely rapid. Death usually takes place from the third to the sixth day of the eruption, commonly as a result of sudden heart failure.

**Variola Pustulosa Hæmorrhagica.**—Hemorrhagic extravasation into the skin may develop at any time during the course of the variolous exanthem. Various types of hemorrhagic small-pox may exist, intermediate between variolous purpura and the pustular hemorrhagic form. Hemic effusion may take place during the papular stage of the disease, and may occur in the papules themselves or in the intervening areas of skin. Or the cutaneous hemorrhage may first appear during the period of vesiculation. In this case the vesicles, instead of containing clear serum, fill with a sanguinolent fluid. In other cases the extravasation of blood may be delayed until the pustular stage is reached. The later the hemorrhage is postponed, the more conspicuous are the variolous lesions. The earlier it develops, the more will the true small-pox eruption be suppressed. The amount of swelling and edema is proportionate to the extent and development of the small-pox exanthem. When petechiæ and ecchymoses develop early, the skin has a peculiar livid appearance and there is not much swelling. Scattered here and there between the flat, poorly



formed vesicles are seen non-elevated, pea-sized or larger, bluish, ecchymotic spots.

The hemorrhagic condition of the pustules may be limited to certain localities, or it may extend over the entire body. Inspection of the legs will often afford the first evidence of this malignant tendency. During the papular or vesicular stage it will be noted that some of the lesions upon the lower extremities are surrounded by a halo of the tint of dilute claret wine. At a later period scattered pustules in this region will be seen to have centers of the color of indigo blue. By degrees others will take the same appearance, and the color gradually deepens

until at last, in severe cases, the pustules on all parts of the body become distinctly hemorrhagic.

Pustular hemorrhagic small-pox is more apt to develop in aged and debilitated subjects, in pregnant women, and in those addicted to the free use of alcohol.

The prognosis in less marked hemorrhagic cases depends somewhat upon the character of the prevailing type of the disease. Modified eruptions associated with hemorrhage might with propriety be termed *hemorrhagic varioloid*.



Fig. 206.—Small-pox—mild type observed within recent years in many sections of the United States (Welch and Schamberg).

**Exceptionally Mild Small-pox.**—An extremely mild form of small-pox has been prevalent in different sections of the United States during various periods since 1898. The initial illness and the succeeding eruption are both much milder and less protracted than in ordinary small-pox. Even in unvaccinated subjects, the eruption is often scant, and when it is more copious, the period of evolution and involution is abridged. Owing to the remarkably mild character of the disease, controversies as to the diagnosis have arisen: the affection has been confounded with chicken-pox, and by others has been regarded

as a form of impetigo contagiosa, or as a hitherto undescribed cutaneous disease.

**Varioloid (Variola Benigna; Variola Modificata; Modified or Mitigated Small-pox).**—The term varioloid, from an



Fig. 207.—Small-pox—extremely mild; lesions dried in the form of horny crusts (Welch and Schamberg).

etymologic point of view, would indicate a disease merely bearing a resemblance to variola. The impression thus conveyed is, of course, a false one, for varioloid is true small-pox in a modi-

fied form. This is evident from the fact that the infection arising from this milder form of the disease gives rise to variola vera in unprotected persons. Since the introduction of vaccination, varioloid has become much more frequent than in former times.

The term varioloid may be reserved for vaccinated cases in which the eruption is markedly abridged in its course, and in which there is but little, if any, secondary rise of temperature. In many cases the invasive manifestations in varioloid are extremely mild, and will warrant a prediction of a sparse exanthem. The average case of varioloid is attended with fever only during the initial stage.

The extent of the eruption varies greatly in different cases of varioloid. I have seen several undoubted cases with but a single lesion upon the skin. The protection may be almost, but not quite, complete, and the patient may pass through the initial stage, but remain free of eruption. To this most benignant form of small-pox the term *variola sine exanthemate*, or *variola sine variolis*, has been given.

There is nothing peculiar about the eruption of varioloid except that it is milder in its course, of shorter duration than that of variola, and exhibits various irregularities. In the milder forms the lesions do not pass through all the stages, but become abortive and dry up at an early period. In the severer forms the eruption, although confluent or semiconfluent, pursues a distinctly modified course. In such cases the lesions do not penetrate into the deeper layers of the skin, but remain limited to the epidermis. Hence the course of eruption is shorter, the process of suppuration is abridged, and the lesions desiccate early; in addition, the crusts are rapidly thrown off, and there is little or no scarring.

When the modification of the eruption is still greater, it is not unusual to find that the lesions develop into large, solid, conical papules, having at their apices small vesicles which rapidly desiccate and form thin crusts. After the crusts have fallen off, the lesions remain tuberculated for some time. Sometimes these tubercles present the appearance of warty excrescences; to this form of the eruption the name *variola verrucosa*, or *wart-pox*, has been given. This modification of the small-pox eruption is seen usually upon the face. In the course of time the elevations flatten down and disappear, as a rule, without leaving scars. Another somewhat common form of

the eruption is that known as *variola miliaris*; in this variety the majority of the vesicles are very small—not larger than a millet-seed; without progressing further they turn yellow, desiccate, and disappear. Not rarely a few tolerably well-developed pustules are found mixed with these smaller lesions.

*Variola corymbosa* is a designation applied to those eruptions which exhibit grouping of rather flat pustules in the form of corymbs or clusters. It is alleged by some writers that the



Fig. 208.—So-called “*variola verrucosa*”—tuberculated lesions after the crust has been shed from the apex; favorable form; elevations ultimately disappear (Welch and Schamberg).

mortality-rate is particularly high in cases showing this character of eruption.

The contents of abortive vesicles and pustules frequently desiccate without rupturing, producing hard, horny, convex, shining, reddish-brown crusts. This form is designated *variola cornea*, or *horn-pox*. The reddish-brown, horny crusts are quite characteristic of small-pox. They are particularly common in varioloid, and often materially aid one in the diagnosis of doubtful cases. The horny crusts are seen most fre-

quently on the hands and forearms, but may also be noticed at times on the face.

In the form of the eruption termed *variola siliquosa* there is a retrogression of the pustules, with absorption of the contents and the production of epidermal cavities filled with air. In addition to the above irregular form of the small-pox eruption writers have described other varieties, such as *variola conica*, *crystallina*, *emphysematica*, *fimbriata*, *lymphatica*, *pemphigosa*, *pustularis*, *rosea*, *morbillosa*, *carbunculosa*, *globulosa*, etc. These various designations do not indicate separate varieties of the disease, but merely different appearances, produced by more or less trifling changes in the lesions.

**Cutaneous Complications and Sequelæ.**—*Boils* constitute the most frequent complicating disorder met with in small-pox. But few patients pass through an attack of *variola vera* without suffering from numerous furuncles. The subjects of confluent small-pox suffer more severely than those who have a lighter form of the disease. Even patients with varioloid are not always exempt from this troublesome complication. The furuncles develop most commonly after the stage of decrustation, about the twentieth or twenty-fifth day of the disease.

**Subcutaneous Abscesses.**—Subcutaneous abscesses are commonly associated with the more superficial furuncular inflammations. These may occur upon any part of the body surface, but involve with predilection the scalp, face, arms, and legs. They are often preceded by a cellulitis or a phlegmonous inflammation of the skin and subcutaneous tissue.

*Carbuncles* occasionally occur during convalescence from small-pox.

**Erysipelas.**—This complication, when it develops, usually appears at the end of the second or third week of the disease. The face is the region most often affected, although the process may attack the extremities or trunk. At times a diffuse *erysipelatoïd inflammation* of the skin occurs, without the actual development of a true erysipelas.

**Bed-sores.**—Bed-sores occasionally occur in the course of small-pox, as they do in other protracted diseases. They are far less frequent at the present time than in earlier days. They result from pressure, malnutrition, and uncleanness, and may usually be avoided by careful nursing.

**Gangrene.**—At times, during the pustular stage of small-pox, the swelling and inflammation of the skin may be so great as

to produce multiple areas of necrosis. Sloughing of the skin may also result from undermining of the integument by subcutaneous abscesses.

Apart from these losses of cutaneous tissue, spontaneous gangrene of the skin occasionally occurs during the course of variola. The genitalia are the parts most commonly involved. *Gangrene of the scrotum* is a complication of great gravity, for most patients thus attacked succumb to the disease.

Gangrene of the skin is not limited to the regions above mentioned. It may attack almost any portion of the cutaneous surface. During a recent epidemic I observed three cases of gangrene of the scrotum and five cases in which gangrene occurred upon various portions of the thigh. In some of the latter cases extensive destruction of the cutaneous, subcutaneous, and muscular tissues occurred, the sphacelated areas attaining at times the size of the palm of the hand. In four of the five cases recovery took place after a tedious convalescence. It may be of interest to note that most, if not all, of these patients suffered from more or less impetigo variolosa.

**Etiology.**—Small-pox is one of the most contagious of all disorders, and there is an almost universal susceptibility to the infection. Age, sex, and condition of life do not materially influence liability to attack. The prevalence of the disease is considerably influenced by season, small-pox being in the temperate zones much more common in the cold months of the year.

Small-pox is infectious in all stages characterized by symptoms; the infectivity is least during the initial stage, and greatest during the suppurative and early desiccative periods. The disease is usually contracted by more or less close contact with a person suffering from the disease, but it may be transmitted through infected garments or other articles. The contagion may be carried a considerable distance through the air from large small-pox hospitals.

**Bacteriology.**—There can be no doubt that small-pox is the result of the introduction into the body of a specific micro-parasite. The causative organism must be present in the cutaneous lesions, for the disease may be readily inoculated. The fluid of early variolous lesions is sterile on ordinary media. After the seventh or eighth day the fluid contains microorganisms, chiefly streptococci, which have been described in connection with the disease. These organisms can be excluded

as bearing any etiologic relationship. Great interest attaches to the researches of Guarnieri, and more recently to those of Councilman and his associates, upon the presence of an alleged protozoön, the *cytocytes variolæ*, in the lesions of small-pox and vaccinia. This is regarded by these and other workers as the parasite causing the disease. Certain other investigators believe the bodies to be degeneration products. In view of our imperfect knowledge of protozoölogy the parasitic nature of these bodies can, at the present time, neither be positively proved nor refuted.

**Pathology.**—*The Histopathology of the Pock.*—The microscopic structure of variolous lesions has been studied by Bärensprung, Auspitz and Basch, Ebstein, Rindfleisch, Unna, Weigert, Touton, Renaut, Leloir, Buri, and others.

Unna has carefully studied the structural changes in the skin, employing the most modern histologic technic.

According to Unna, the development of the variolous vesicle is the result of certain peculiar degenerations of the protoplasm of the epithelial cells. The main features which differentiate the vesicle formation in small-pox from that in chicken-pox are the slowness of growth and the prompt addition of sup-puration to the epithelial degeneration.

The changes in the protoplasm of the cells of the mucous layers of the epidermis are of two chief varieties. These have been designated by Unna *reticulating* and *ballooning* colliquation (softening). Both are special forms of *fibrinoid degeneration*.

Reticulating colliquation occurs as follows: As a result of the poison of the disease, the protoplasm of the cells becomes edematous and undergoes partial or complete liquefaction, thus converting the cell-body into a large cavity. When the liquefaction of the cells is partial, protoplasmic trabeculæ form, which coagulate into a network often radially arranged, and hold the nucleus and cell-mantle together.

The name "reticulating" colliquation is given to this degeneration because of the net-like character of the structure.

In the second form of fibrinoid metamorphosis—that designated *ballooning* colliquation—the whole protoplasm of the cell swells up and becomes cloudy and opaque. Most of the cells have the form of hollow spheres or balloons, the predominance of which gives rise to the name "ballooning colliquation."

The reticulating degeneration mainly attacks the older cells,

or those in the upper strata of the Malpighian layer, and the ballooning degeneration the younger cells, or those in the lower strata.

Exceptionally a sort of *umbilication* may result from the accidental piercing of the center of the pock by a hair-follicle, the cornified neck of which limits the swelling of the prickle-cells. The characteristic depression in the center of the vesicle is due, however, to another cause. It is the result of the reticulating degeneration and edematous swelling of the cells. These occur chiefly at the periphery, whereas the ballooning degeneration, which occurs slowly and gives rise to less swelling, takes place in the center. The umbilication is, therefore, due rather to a bulging of the periphery of the vesicle than to a retraction of the center.

The primary pustulation is due to the variolous poison, but prolonged suppuration must be ascribed to secondary pyogenic infection.

*Healing.*—Even before the contents of the pustule are completely dry, a thin layer of epithelial cells lying close on the connective tissue extends from all sides under the pustule.

When the scab is thrown off, there is displayed a persistent, trough-like depression. Where the scab does not to any great extent depress the base of the pock, the papillary layer is not completely flattened out, and the scar is not so deeply excavated.

The pocks upon the *palms* of the hands and *soles* of the feet develop in a somewhat different manner from those elsewhere. The reticulating and ballooning degenerations are only imperfectly seen here.

Stokes believes that "the primary exudation of plasma-cells has not been sufficiently emphasized by Unna. These plasma-cells are probably derived in part from proliferation of the endothelial lining of the lymph-spaces and blood-vessels. Very early there is increased number of plasma-cells in the lymph-spaces and around the small blood-vessels. The condition resembles the response to some injury, and seems to be the *first change in the skin*, since the various changes in the epithelial cells are not yet present."

Councilman and his associates have carefully studied the pathology of variolous lesions.

In the main, Unna's findings are confirmed, but some new facts concerning the histology of the pock are presented.



The earliest form of degeneration is said to take place in the nuclei of the cells of the rete mucosum. They become swollen, more vesicular, and exhibit increased central clumping of the chromatin. In the lesions leading to vesicular formation there is a reticular degeneration of the cytoplasm, with a more advanced degeneration of the nucleus. The nuclei may lose their form and become irregular and shriveled, assuming peculiar shapes. Advanced forms of cytoplasmic inclusions are common in the nuclear spaces and in vacuoles in the protoplasm.

A later form of degeneration, the ballooning degeneration of Unna, is regarded as a hyaline fibrinoid degeneration.

The early exudate is clear, and contains no admixture of cells. Indeed, a conspicuous feature of the small-pox process everywhere is the paucity of cells in the exudate. The cells appear only at a late stage of the process, and are much less than in other degenerations and exudations due to bacterial infection.

Councilman, Magrath, and Brinckerhoff believe that Weigert's explanation of the cause of the *umbilication* is correct in many instances. Weigert regarded the umbilication to be due to the diphtheroid degeneration of the epithelium of the center of the vesicle, thus preventing the distention of the center by the exudate; he believed, however, that the hair-follicles and sweat-ducts also played a part in its formation.

**The Diagnosis of Small-pox.**—The detection of small-pox in the pustular stage, particularly in well-marked eruptions, is a facile matter, even for the merest tyro in medicine. The picture of a profuse pustular variola can scarcely be mistaken for anything else.

It is especially the mild and modified forms of small-pox that present difficulties in diagnosis. The degree of protection in varioloid, *i. e.*, in small-pox modified by vaccination, may be so great that the eruption may consist of but a few papules or, indeed, the eruption may be absent altogether, constituting a variola sine exanthemate. The diagnosis in such cases would, of course, present perplexities. It is a matter of considerable importance to ascertain whether variola is prevailing in a community, and whether the patient has been exposed to the infection.

The degree to which the patient is protected by vaccination or previous attack of small-pox should always be investigated.

The presence of a comparatively recent vaccine scar or pits of a former attack would constitute strong presumptive evidence against the existence of small-pox in the individual.

The occurrence of a characteristic initial illness preceding, by several days, the outbreak of an eruption, is of important diagnostic value. The diagnosis cannot be positively made before the appearance of the eruption, unless there has been undoubted exposure to the disease.

The initial illness may be confounded with influenza, typhus or typhoid fever, meningitis, acute gastritis, etc. After the appearance of the eruption, the diseases which may be brought into diagnostic conflict are measles, scarlet fever, chicken-pox, roseola vaccinosa, syphilis, acne, iodid and bromid eruptions, glanders, eczema, etc.

*Measles.*—Measles may be confounded both with the morbilliform prodromal rash and with the beginning true eruption of variola.

That measles may bear a strong resemblance to small-pox is evidenced by the fact that in epidemics of variola cases of measles are not infrequently sent to the small-pox hospitals under erroneous diagnoses. It is the confluent forms of variola which, in the early eruptive stage, resemble measles most, for in this type of the disease the face is often considerably suffused.

The diagnosis can, in the vast majority of cases, be determined by attention to the following points:

The constitutional symptoms preceding the eruption in small-pox are usually more severe (temperature,  $104^{\circ}$  to  $105^{\circ}$  F.), and are commonly, though not always, accompanied by pronounced backache. The temperature, moreover, falls a few days after the appearance of the eruption, while the fever in measles at this time continues high. The catarrhal symptoms affecting the eyes and the respiratory passages and the buccal eruption, which are so constant in measles, are absent in small-pox, at least during the prodromal stage. The eruption in measles consists of large maculopapules which are soft and velvety to the touch, while the papules in small-pox are smaller and have a firm and shotty feel. The sweep of an experienced hand over the skin will often suffice to differentiate the two diseases. Where there is doubt, twenty-four hours' delay will dispel all uncertainty, for by this time the eruption of measles will have become flatter and more diffuse and the papules of small-pox firmer and more distinctly elevated.

**Scarlet Fever.**—The peculiar distribution and fleeting character of the scarlatiniform prodromal rash will enable one to distinguish it from scarlet fever.

Scarlet fever may, however, be closely simulated by that form of hemorrhagic small-pox in which the entire cutaneous surface becomes the seat of a diffuse, dusky-red rash, especially well marked in the crural triangle. This form of purpura variolosa is, however, usually preceded by excruciating back-ache. If the patient be watched for a short time, a few ill-defined vesicles will usually make their appearance. The development of hemorrhages would not in itself be conclusive, as these might occur in hemorrhagic scarlet fever, except that hemorrhage beneath the conjunctiva would indicate the existence of small-pox. The early occurrence of sore throat would point toward the scarlatinal nature of the disease.

**Chicken-pox.**—The differential diagnosis between small-pox and chicken-pox will be considered under the latter disease.

**Syphilis.**—It may at first seem strange that syphilis and small-pox should ever be confounded. Upon reflection, however, it will be seen that the two diseases have many phenomena in common. They are both infectious diseases, due, we may assume, to the invasion of the blood by a microörganism. Each has a period of incubation, at the end of which there develop certain general manifestations accompanied by an exanthem and an enanthem. The resemblance may be still further accentuated by the fact that the varioliform syphilid is not rarely associated with, and even preceded by, fever and general aches and pains. It is particularly the pustular syphiloderm which is apt to be confounded with small-pox. The eruption may at times appear rather suddenly and pass through the stages of papule, vesicle, and pustule in a surprisingly brief period of time. The lesions may be quite firm to the touch, and in other respects closely simulate those seen in small-pox.

In syphilis one can frequently obtain—(1) *A history of infection* and a description of the initial lesion. Indeed, the chancre or the remains may still be detected. Not uncommonly there are present associated evidences of syphilis, such as mucous patches, flat condylomata, ulceration of the tonsils, alopecia, etc. The varioliform syphilid may develop after the disappearance of one of the earlier syphilitic eruptions.

(2) *The onset of the two diseases* is, as a rule, quite different. The syphilitic subject will usually give a history of having felt

weak and debilitated for some weeks. If fever precedes the eruption, it is ordinarily not very high, and is not accompanied by severe prostration. When the eruption appears, the patient usually calls upon the physician at his office or at the hospital. We do not note that sudden illness and prostration which precede unmodified small-pox. In the latter disease the patient, instead of calling upon the physician, sends for him.

It must be remembered, however, that in varioloid the initial symptoms may be mild or, in rare instances, absent. On the other hand, in rare cases syphilis may present an initial illness which strongly counterfeits that of small-pox.

(3) *The development of the eruption* in small-pox is rather sudden. Ordinarily, in twenty-four to forty-eight hours, the full complement of lesions has appeared. In syphilis the eruption may continue to come out for quite a number of days in successive crops. It must be admitted, however, that in modified small-pox three or four days may sometimes elapse before the complete appearance of the exanthem.

(4) *The distribution* of the varioliform syphilid may be identical with that observed in small-pox. Frequently, however, variations are noted. The pustular syphilid may involve the trunk more copiously than the face; this would be exceedingly rare in well-marked small-pox. The dorsal surfaces of the wrists and hands are nearly always involved in small-pox, but may escape entirely in syphilis. The palms of the hands and soles of the feet are always involved in severe small-pox; in moderate eruptions they nearly always present some lesions, and in modified small-pox they may or may not escape completely. The pustular syphilid, on the contrary, attacks the palmar and plantar surfaces with the greatest rarity.

(5) *The character of the eruption* in syphilis and small-pox may, in the beginning, be so nearly identical as to make the diagnosis from the eruption alone quite impossible. It will be noted, however, that the efflorescence of small-pox presents a much greater uniformity in the character and development of the lesions over the body than does syphilis. Syphilis is characterized by an essentially multiform eruption; it is not uncommon to find small pustules, large pustules, and papules interspersed, and these in varying stages of evolution and involution.

The vesicles and pustules of syphilis are usually conical, and involve merely the summits of the elevations; they never

become full and globular, and fill the entire lesion, as do those of small-pox. Beneath the syphilitic crusts considerable ulceration not uncommonly occurs. According as this is slight or severe there will be seen, upon detachment of the crusts, a small, reddish-brown, pigmented stain or an excavated ulcer. The latter heals with the production of a depressed scar.

(6) *The course of the syphilitic eruption is relatively chronic, compared with that of small-pox. The lesions of variola undergo a striking change in a few days. The syphilitic efflorescence is indolent, and presents, as a rule, no decided alteration of appearance within this period of time. By the sixth or seventh day in small-pox the lesions develop into those large, full, round, hemispheric pustules which are so characteristic of the disease.*

Finally, to the physician who has seen much small-pox, there is a something in the picture—an impression given by the *ensemble*—which, while not definable in language, is, nevertheless, of subtle aid in the diagnosis.

*Roseola Vaccinosa.*—Vaccination with animal virus sometimes causes an erythematous or rubeoloid rash, known as *roseola vaccinosa*, to appear from the eighth to the twelfth day of the vaccine disease. I have on several occasions seen this rash confounded with the eruption of variola, especially during epidemic visitations of the disease. The distinguishing features are that it accompanies vaccinia, that it is not preceded by a very high temperature, and that it consists of macules rather than papules.

*Acne.*—Mild cases of modified small-pox, exhibiting but a few papulopustules about the face, may bear a close resemblance to acne. The history of exposure, the existence of an initial stage, and the progressive evolution of the lesions will speak for the variolous nature of the eruption, while the presence of blackheads, a history of previous outbreaks in the individual, and the absence of preceding illness will decide in favor of acne.

*Drug Eruptions.*—Drug eruptions, particularly those resulting from the ingestion of the iodids and bromids, may simulate the exanthem of small-pox. The history and absence of an invasive stage will usually suffice to make the diagnosis clear. I have seen some bromid eruptions which closely resembled the eruption of small-pox.

*Glanders.*—Glanders in an early stage may be mistaken for small-pox. The febrile symptoms are not unlike those of

variola, and the subepidermic abscesses, when small, feel like hard infiltrations in the skin. In this disease, however, there are, in addition, deep-seated abscesses, infiltration of the areolar tissue, rapid ulceration, and at times gangrene. The disease is rare, and the patients are usually stablemen.

*Eczema.*—Severe crusted eczemas of the face may bear a rough resemblance to confluent small-pox during the desiccative stage. I have known physicians experienced in small-



Fig. 209.—Eruption closely resembling small-pox, occurring in a patient suffering from ulcerative endocarditis who was taking bromids (courtesy of Dr. Ross V. Patterson).

pox to make this error through a hasty and superficial examination of the patient. Inspection of the trunk and extremities will make the diagnosis clear.

During epidemics the anticipatory attitude of the physician's mind will often lead him to suspect and diagnose as variola diseases which bear only a superficial or remote resemblance to it. Thus, patients with febrile herpes, herpes zoster, erythema multiforme, and other skin diseases have at such times been sent to a small-pox hospital as cases of variola. Contrariwise,

in the absence of an epidemic, mild cases of small-pox are very likely to be overlooked.

Whenever the diagnosis between small-pox and a disease simulating it is in doubt, observation of the progress of the eruption for a period of twenty-four to thirty-six hours will usually make clear the nature of the disease.

**Prognosis.**—The prognosis of small-pox is influenced by the vaccinal condition of the patient, the severity of the prevailing form of small-pox, the age of the patient, and the extent and depth of the cutaneous lesions. Of all the factors bearing upon the outcome of the disease, the vaccinal condition is the most important.

**Treatment.**—The preventive treatment of small-pox outweighs all other considerations in the therapeutics of this disease. Proper vaccination and revaccination are all-sufficient safeguards against this dread malady. After the symptoms have once developed, the purpose of treatment is to keep the patient alive until the disease has run its course. The general treatment is not unlike that applicable to any other acute infectious process—consisting of a nutritious and easily assimilable diet, stimulants, and symptomatic remedies.

**Local Treatment.**—The topical use of antiseptics in small-pox has been advised and employed for many years. Mercury, in the form of corrosive sublimate solution or an ointment of some salt of mercury, boric-acid solution, permanganate of potash solution, iodoform, carbolic acid, eucalyptus, thymol, salicylates, and a host of other remedies have been used without striking results.

The object of local treatment is to assuage the pain, burning, and itching, to correct the offensive odor, to guard against septicemia, and to lessen or prevent scarring.

Lint masks soaked in ice-water and glycerin greatly *relieve the itching and burning*. Dusting-powders containing 5 per cent. of iodoform or 15 per cent. of aristol are useful in *abating the offensive stench*.

*To guard against septicemia* prolonged warm baths may be given during the stage of suppuration and desiccation; the pustules become macerated and may be evacuated by rubbing the skin with gauze. These baths serve also to lower the temperature and improve the nervous symptoms. Sometimes it is advantageous to give antiseptic baths, the water containing bichlorid of mercury (1 : 10,000 to 1 : 20,000) or

creolin in the strength of 1 : 500. When it is inconvenient or impossible to employ baths, much good will often be derived from opening and evacuating the pustules on the trunk and extremities and sponging the bases with absorbent cotton wet in a 1 : 5000 bichlorid of mercury solution.

For extensive impetigo variolosa a bichlorid bath is given, followed by dusting of the body with:

Iodoform..... ℥j;  
Talc..... ℥iv.—M.

Or—

Aristol..... ℥iij;  
Talc..... ℥iv.—M.

*Prevention of Scarring.*—Various methods have been employed to prevent pitting in small-pox, but none has stood the test of experience. It must be remembered that many patients will



Fig. 210.—Small-pox, showing effect of iodine treatment; right arm painted with iodine from wrist to elbow each day. Photographed on tenth day. Secondary pyogenic lesions entirely restrained (Welch and Schamberg).

escape scarring no matter what treatment is employed. In children the lesions are more superficially located, as a rule, than in adults. In a patient once vaccinated the chances of recovery without pitting are also good.

In order that so-called ectrotic remedies should be regarded as meriting the claims made for them, they should prevent



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ere small-pox in unvaccinated individuals. In small-pox, pitting is as great and as much to be feared as in former times. Gregory, the great English small-pox doctor, wrote: "There is no peculiar method which can prevent the prevention of pits and scars. . . . The application of a little cold-cream to the hardened scabs is all that is recommended."

Very pretty much all the vaunted remedies tried, but without encouraging results. The application that seemed to accomplish more was the use of *iodin*. The pure or diluted iodine is painful to the face once or twice a day according to the sensitiveness of the skin. About the eighth or tenth day a hard, parchmenty mask is formed, which begins to crack and peel off, at which time a weak carbolized vaselin is to be applied. The iodine treatment tends to shrink the pustules, hasten decrustation, to destroy the offensive odor, and to some extent to lessen pitting, although in severe cases it will not prevent it. The liability to secondary pyogenic infection of the skin is obviated, as is demonstrated in the accompanying photograph.

The *red-light treatment of small-pox*, based upon the exclusion of chemical rays of light, was strongly championed by the late Niels Finsen, of Copenhagen. I concur in the verdict of Ricketts and Byles, of London, who say: "We cannot agree that the treatment has any of the merits which have been claimed for it."

## VACCINATION AND CUTANEOUS DISEASES

The following classification of skin diseases associated with vaccination is a modification of that formulated by Malcolm Morris and later revised by Frank:

|   |                 |   |
|---|-----------------|---|
| I. Eruptions attributable to the vaccine virus pure and simple. | Local . . . . . | <ul style="list-style-type: none"> <li>{ Normal vaccinia.</li> <li>{ Erythematous dermatitis (areola).</li> </ul>   |
|   | Constitutional  | <ul style="list-style-type: none"> <li>{ Generalized vaccinia.</li> <li>{ Diffuse vaccine erythema.</li> <li>{ Vaccinal roseola.</li> <li>{ Vaccinal lichen.</li> <li>{ Vaccinal miliaria.</li> <li>{ Purpura.</li> <li>{ Erythema multiforme.</li> <li>{ Urticaria.</li> </ul> |

|  |                 |   |
|--|-----------------|---|
| II. Eruptions attributable to mixed infection at time of vaccination or later. | Local . . . . . | { Erysipelas.<br>Impetigo contagiosa.<br>Furunculosis.<br>Vaccinal ulcer.<br>Localized gangrene.<br>Cellulitis. |
|  | Constitutional  | { Disseminated gangrene.<br>Syphilis.<br>Leprosy (?).<br>Tuberculosis (?).                                      |
| III. Eruptions sometimes following vaccination.                                |                 | { Eczema.<br>Pemphigus (dermatitis bullosa)<br>Psoriasis.<br>Furunculosis.<br>Urticaria.                        |

The above classification is doubtless faulty in many respects and open to criticism, but will, perhaps, serve the purpose of indicating, in a general way, the etiologic factors in the production of the various dermatoses that may complicate vaccinia.

**Generalized Vaccinia.**—This is, perhaps, the only eruption among those enumerated (with the exception, of course, of the normal vaccine disease) which may with positiveness be attributed to the pure vaccine virus. There are two varieties of generalized vaccinia: (1) Spontaneous generalized vaccinia (vaccinal eruptive fever, vaccinola). (2) Generalized vaccinia from autoinoculation.

Spontaneous generalized vaccinia is an extremely rare condition; many cases formerly regarded as instances of spontaneous diffusion of the eruption are, in all likelihood, cases of autoinoculated vaccinia. The eruption appears usually from the fourth to the tenth day after vaccination, and most often from the sixth to the ninth day.

The lesions appear in successive crops, and pass through the stages of papule, vesicle, and pustule. The eruptive lesions, being of different age, may be seen in varying stages of development. Complete subsidence of the efflorescence usually occurs before the twenty-first day. The lesions may be few or numerous, and may appear upon any portion of the body surface. Fever is absent in some cases and present in others, being usually proportionate to the extent of the eruption and the associated complications, particularly glandular enlargement.

Generalized vaccinia may present a considerable resemblance to variola. It may usually be distinguished by the absence of

an initial stage, its occurrence after vaccination, the appearance of the eruption in crops, and the irregular distribution of the lesions. Its differentiation from inoculated variola is rather more difficult.

**Generalized Vaccinia from Autoinoculation.**—This form of generalization of the vaccine lesions is by no means rare. Many writers at the present day are inclined to regard the vast majority of cases of generalized vaccinia as due to external inoculation. French writers have reported a number of



Fig. 211.—Accidental multiple vaccinations upon the face, produced by child's fingers infected from its own vaccination (Welch and Schamberg).

instances of diffusion of the vaccinal eruption over an extensive cutaneous area the seat of a moist eczema. Unless there is danger of exposure to small-pox, it is, indeed, advisable to postpone vaccination if the subject is suffering from a dermatosis in which there is denudation of the skin. The number of lesions may be but two or three, or there may be a profuse eruption. The development of a few supernumerary lesions in the neighborhood of the original vaccine insertion is by no means uncommon; this may occur even when there is no demonstrable abrasion of the skin. The virus may be trans-

ferred by the patient himself through scratching, or it may be conveyed by a second person.

The lesions in vaccinia generalized by autoinoculation appear at intervals after the original vesicle is well advanced; they seldom continue to make their appearance after the third week.

**Sore Arm.**—Under this caption may be discussed a condition which, only in its severer phases, is to be regarded as a complication. A certain amount of inflammatory reaction (areola) about the fully developed vesicle is to be viewed as a not undesirable and probably an essential part of the normal evolution of the vaccine lesion. It not infrequently happens that instead of a moderate erythema and edema of the skin, these phenomena are present to an excessive degree. Now and then the inflammation about the vaccination reaches a violent degree of intensity and spreads over a considerable portion or the whole of the affected arm. In such cases the cellular tissue may become implicated, giving rise to a diffuse *cellulitis*. The arm under such conditions is red, swollen, hot, and painful, and there is apt to be some associated systemic disturbance.

In other cases the inflammation is more circumscribed, and its force is spent upon the vaccine lesion and the skin in its immediate neighborhood. In such cases a necrosis of the cutaneous and subcutaneous tissues may occur, with the formation of a slough. When this is thrown off, an ulcer is left at the site of the vaccination. In other cases the vaccinia may pursue a normal course to the development and decline of the areola, but instead of the formation of a typical scab, an excavated ulcer appears, covered by a soft, thin crust which frequently falls off and is renewed, the ulcer persisting in this manner for a long time. Martin, of Boston, repeatedly observed this irregular course upon arms which had been vaccinated with long humanized virus. Upon the opposite arm, on which bovine virus had been simultaneously employed, a perfect result was obtained.

This observation, as well as the scientific investigations, of latter-day observers, suggests that the excessively "sore arm" is due to the introduction of something in addition to the pure vaccine virus, and, furthermore, that this additional something is of the nature of extraneous microorganisms.

It is not uncommon for the arm to become very "sore" as the result of thoughtless or accidental traumatism on the part of the vaccinée. The vesicle is frequently ruptured by a blow,

friction of clothing, scratching, and other like causes. Where the vesicle is unprotected, the shirt-sleeve often becomes glued to the vaccination lesion; the attempts at separation cause a detachment of the crust. All these forms of traumatism doubtless act in the same manner: they prevent the formation of a firm, compact crust, which is nature's protective covering of the vaccine wound. By opening up the wound they permit of infection with extraneous germs, which may produce merely excessive inflammation or may lead to ulceration or other more severe vaccinal complications.

Inasmuch as we can obtain a lymph which is rendered free of extraneous germs by the process of glycerinization, by proper care of the arm before, during, and after vaccination, we should be able, in the vast majority of instances, to prevent the development of "sore arms."

**Vaccinia Hæmorrhagica.**—From time to time cases of vaccinia are seen in which the areola about the vesicle at the acme of its development becomes hemorrhagic, assuming the appearance of a diffuse ecchymosis. In some instances the skin beyond the areola may present a bluish appearance. In rare cases there may occur scattered petechiæ and ecchymoses, and hemorrhages from some of the mucous membranes. The cause of this complication is obscure; it is doubtless not so much due to any peculiarity of the lymph, as to some underlying systemic condition favoring hemorrhagic extravasation, such as scorbutus.

**Vaccinal Ulceration.**—Ulceration at the site of insertion of the lymph is by no means an uncommon complication of vaccinia. Acland says that nearly 4 per cent. of the vaccinal injuries inquired into by the English Local Government Board (1888-91) were due either to ulceration or to glandular abscess. There is, in all probability, one of two factors which may give rise to vaccinal ulceration—either the introduction into the skin of extraneous microorganisms (at the time of vaccination or later) capable of producing a tissue necrosis, or an abnormal or vitiated state of health which permits of an excessive and unusual local reaction. Both of these factors appeared to play an important rôle in the production of "bad arms" among the soldiers during the United States Civil War. In the admirable report of the Board of Health of Louisiana of 1884, compiled by Dr. Joseph Jones, we read the following: "In scorbutic patients all injuries tend to form ulcers of an unhealthy character, and the

vaccine vesicles, even when they appeared at the proper time and manifested many of the usual symptoms of the vaccine disease, were, nevertheless, larger and more slow in healing, and the scabs presented an enlarged, scaly, dark, unhealthy appearance. In many cases a large ulcer, covered with a thick, laminated crust, from one-quarter to one inch in diameter, followed the introduction of the vaccine matter into scorbutic patients." Either a weakened resistance, on the one hand, or an extraneous infection on the other, may be responsible for vaccinal ulcerations.

**Localized Vaccinal Gangrene.**—In extremely rare instances death of the tissues *en masse* at the site of vaccination may occur, producing a localized gangrene. It would seem that in these cases the gangrene is due to low vitality of the tissues, rather than to any impurity of the lymph. In cases observed by Balzer, Wheaton, and Acland, the children were of syphilitic parentage. Hutchinson, however, saw three cases of vaccinal gangrene in children in whom no such cause could be invoked. The view that the condition of the tissues is the most important etiologic factor in the production of this complication is corroborated by the experience of surgeons in the Confederate Army during the United States Civil War. Dr. Joseph Jones writes: "After careful inquiry we were led to the conclusions that these accidents were, in the case of Federal prisoners, referable wholly to the scorbutic condition of their blood and the crowded condition of the stockade and hospital. The smallest accidental injuries and abrasions of the surface, as from splinters or bites of insects, were in a number of instances followed by such extensive gangrene as to necessitate amputation. The gangrene following vaccination appeared to be due essentially to the same cause, and in the condition of blood of these patients would most probably have attacked any puncture made by a lancet without any vaccine matter or any other extraneous material."

**Vaccinia Gangrænosa.**—As has been pointed out by Crocker and others, the term *vaccinia gangrænosa* is a misnomer, inasmuch as the affection recorded under this title occurs after varicella (*varicella gangrænosa*) and other discrete pustular eruptions. Disseminated necrosis of the skin, which in rare instances follows vaccinia, varicella, and pustular dermatoses, may occur independently of these diseases in apparently healthy infants; a better designation, therefore, for this condition is *dermatitis gangrænosa infantum*. The gangrenous changes in the

skin may occur early or late. Stokes, of Dublin, reports a case of so-called *vaccinia gangrænosa* developing forty-eight hours after vaccination. The vaccinal or varicellous pustules may be directly converted into blackish sloughs, which are thrown off and leave deep, excavated ulcers; or the gangrene may not set in until a week or two has elapsed, beginning as papulopustules which crust over, become surrounded by an areola, and then break down and ulcerate. High fever is often present. The cause of this rare condition is obscure; it usually



Fig. 212.—*Roseola vaccinosa* occurring upon the tenth day of vaccination (Welch and Schamberg).

supervenes in the course of some pustular febrile disease, particularly in tuberculous, syphilitic, or rachitic children. It is quite possible that the gangrene is due to infection with some virulent microorganism.

**Vaccinal Roseola (*Roseola Vaccinosa*; Vaccinal Rash or Erythema).**—Under the above designations has been described a rosy, macular rash which occasionally appears in vaccinated persons about the time of maturation of the vesicle. While this eruption is ordinarily seen about the tenth day after vaccination, it has been observed as early as the third day, and

as late as the eighteenth. It usually appears first upon the vaccinated arm, rapidly spreading to the trunk and other portions of the body. The macules are large, irregular, blotchy in appearance, of a rose tint, and not elevated above the level of the skin. In rare instances the macules may coalesce, giving rise to a *diffuse erythema*.

The eruption is of brief duration, lasting from a few hours to a day or two. It may be accompanied by moderate elevation of temperature.



Fig. 213.—Unusually well-pronounced vaccine areola on the tenth day. Evanescent vaccinal papular eruption upon the face (Welch and Schamberg).

The rash is not unlike that of measles, with which, indeed, it has not infrequently been confounded. During epidemics of small-pox vaccinal roseola has been mistaken for the beginning of confluent small-pox. *Roseola vaccinosa* has a complete analogue in the *roseola variolosa*, and exanthem presenting almost identical features, which is not infrequently observed just before the appearance of the eruption of modified small-pox.

**Vaccinal Lichen.**—Crocker states that, in his experience, vaccine lichen has been the most common of the true vaccinal exanthema. He has made notes of twenty cases of this eruption. He states that it may be either papular, papulovesicular,



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appears from the fourth to the eighteenth day—usually on the eighth; in about one-half the cases it is on the arms, appearing in the remainder on the face; the eruption then extends in successive portions or the entire cutaneous surface. The lesions are reddish, conical, pin-head-sized, surrounded by a halo, and often surmounted by minute vesicles or pustules. In the experience of the writer, vaccine lichen has been excessively rare.

**Vaccinal Miliaria.**—In rare cases, instead of a papular eruption, a vesicular one may take place, usually from the eighth to the eleventh day. Danchez writes: "We give the name vaccinal miliaria to a satellite eruption of the vaccinal eruption, appearing from the eighth to the twelfth day (very rarely later) after vaccination. It is constituted by small vesicles the size of a grain of millet, accumulated in great numbers over large surfaces, containing a transparent liquid at first, then opaque, followed by slight furfuration and never leaving scars after it."

A miliary vesicular eruption is occasionally seen in or around the vaccination areola. These vesicles are not true vaccine lesions, for Martin has shown that the contents inoculated upon another individual fail to produce the vaccine disease.

**Erythema Multiforme and Urticaria after Vaccination.**—The eruption of multiform erythema is occasionally seen in vaccinated individuals between the first and tenth days after the insertion of the virus. In some cases the eruption is delayed considerably beyond this period. The lesions may be erythematous, papular, tubercular, vesiculobullous, or mixed.

At times the eruption is annular. Crocker saw a well-marked case which began on the ninth day after vaccination and was characterized by shilling-sized annulopapular patches. Napier observed a case on the eleventh day which began as rings.

Not infrequently urticarial lesions are present, the eruption being a type of combined erythema multiforme and *urticaria*. Allen and Sobel regard urticaria as one of the most common of the generalized vaccinal eruptions.

Norman Walker has observed five cases of erythema multiforme after vaccination with glycerinated lymph. In all, the early course of the vaccination was uneventful. The eruption was invariably seen on the face and hands, but on other parts as well.

In a review of the vaccinal complications in 1160 vaccinations, Sinigar states that there were 23 cases of erythema, including simple erythematous blushes, finely punctate erythema, erythema of papular or urticarial type, and erythema multiforme. Concerning the date of appearance, 1 rash appeared on the third day, 5 on the eighth, 2 on the ninth, 5 on the tenth, 4 on the eleventh, 1 on the twelfth, 4 on the thirteenth, and 1 on the sixteenth. No age was exempt; in 4 cases the patient was over seventy years of age. The average duration of the rash was forty-eight hours, but in 1 severe case it lasted six days.

**Impetigo Contagiosa.**—The disease is extremely common, independent of vaccination, among dirty and poorly nourished children. Any abrasion of the skin increases the liability of its development. Its occasional occurrence after vaccination, particularly among children in poor hygienic circumstances, is, therefore, scarcely to be marvelled at. The introduction of the infection of impetigo with the insertion of the vaccine virus must be an occurrence of the greatest rarity; inasmuch as impetigo sores develop rapidly (from one to two days) after the skin is infected, we would expect, if the disease were invaccinated, to discover the impetigo lesions twenty-four to forty-eight hours after the vaccination.

As a matter of experience, however, impetigo usually develops at a considerably later period. It may make its appearance at any period up to the complete healing of the vaccinal wound. The first lesions are usually seen about the site of insertion of the vaccine lymph. This area may become quite inflamed, the surrounding epidermis raised up by a seropurulent fluid, and the process extend upon the periphery, with the production of voluminous, ocher-colored crusts. From this as a focus other portions of the skin become infected by autoinoculation through scratching and other means. At times impetigo may assume a bullous form, simulating pemphigus; most of the pemphigoid eruptions after vaccination would appear, however, to belong to the group of bullous dermatitis presently to be described.

In 1885 an outbreak of a cutaneous disease said to have presented the clinical features of impetigo occurred in villages on the island of Rugen, in the Baltic Sea, after the vaccination of seventy-nine children.

Impetigo contagiosa is caused by invasion of the skin by

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germs of contagious pus, independently of its source. There are probably two chief varieties, due respectively to the streptococcus and to the staphylococcus pyogenes.

**Vaccinal Erysipelas.**—Erysipelas is an acute infectious disease resulting from invasion of the body with the streptococcus of Fehleisen. In the vast majority of cases of this disease the infection gains its entrance to the system through a wound of the cutaneous or mucous surfaces; the disease, therefore, is essentially a wound infection.

Inasmuch as vaccinia is attended with the production of a wound of the skin, it is not surprising, particularly in view of the frequent neglect of vaccination wounds, that erysipelas should occasionally occur after this procedure. The erysipela-tous infection is usually conveyed to the vaccination wound at some period subsequent to the insertion of the vaccine virus; in rare cases, however, the specific germs of erysipelas may be present in the lymph, in which event this complication develops on the second or third day after vaccination.

Erysipelas may develop in an infant after vaccination and still be independent thereof. Erysipelas is a common disease among infants; according to Dr. Ogle's testimony before the British Royal Vaccination Commission, 2000 per 1,000,000 infants under three months of age perish from it. It has been known to develop after very trivial injuries, such as the scratch of a pin, abrasion from the friction of clothing, etc.

Both vaccinal erysipelas and erysipelas from other causes are attended with a rather high mortality-rate in infants. Of the deaths attributed to vaccination in England between 1886 and 1891, almost one-half resulted from erysipelas.

As a vaccinal complication, erysipelas appears to be distinctly on the decrease. In 1877 Lotz was able to collect in Germany but two cases of death from this cause in 1,252,554 vaccinations.

The increased attention to asepsis in vaccination, the careful protection to the vesicle when formed, and the employment of bovine lymph will doubtless continue to lessen the frequency of this complication.

It is claimed that animal virus, on account of the comparative insusceptibility of the bovine species to erysipelas, gives greater security against the disease than humanized virus.

Vaccine erysipelas should be trenchantly distinguished from the dermatocellulitis, which is not infrequently observed about

the vaccine lesion, and which occasionally involves the entire upper arm and even the forearm; this is nothing more than an exaggeration of the inflammatory areola. The arm is swollen and intensely reddened, but there is no tendency for the process to spread to other parts of the body, the inflammatory phenomena subsiding after the height of the vaccinia has been reached.

**Vaccinal Syphilis.**—The study of vaccinal syphilis has been bereft of much of its importance since the general adoption of calf-lymph for vaccination. Inasmuch as the bovine species is totally insusceptible to the syphilitic infection, it is obviously impossible to convey this poison by vaccination with lymph from this source. It has been suggested that syphilis might be conveyed in the vaccine virus as a result of a syphilitic vaccinator expelling the lymph through the capillary tube with his breath, but this is a purely gratuitous assumption, entirely without any clinical evidence.

**The Relation of Vaccination to Tuberculosis.**—Whether or not it is possible to transmit tuberculosis in vaccine lymph is an undetermined question.

The danger of conveying tuberculosis in bovine lymph is almost inappreciable. The virus is obtained from calves, and it is pretty well established that calves are but rarely the subjects of tuberculosis. It is stated by Furst, on the authority of Pfeiffer, that but one case of tuberculosis was found among 34,400 calves under four months of age. The statistics of the abattoirs of Augsburg and Munich corroborate the above figures; only one tuberculous calf was discovered at Augsburg among 22,230 slaughtered, and a smaller percentage at Munich.

Furthermore, in well-regulated vaccine establishments calves are subjected to the tuberculin test before vaccination, and are autopsied before the lymph is distributed for use. Even though it were possible, despite these precautions, for tubercle bacilli to get into the lymph, they would perish if the lymph were glycerinated. Copeman, speaking of glycerinated lymph, says: "The tubercle bacillus is effectually destroyed even when large quantities of virulent cultures have been purposely added to the lymph."

Bollinger, Heron, and Acland all seriously doubt whether tuberculosis has ever been transmitted by vaccination.

**Postvaccinal Lupus Vulgaris.**—Cases of lupus occurring in and around vaccination have been reported by Lennander,

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Little, Colcott Fox, Stelwagon, Acland, and others. Observers saw the lupus years after the vaccination formed. Fox saw a case of lupus begin in a vaccination shortly after the sore had healed. The child subsequently developed a disseminated lupus, subperiosteal tuberculosis nodules, and pulmonary phthisis. It is highly probable this child was already tuberculous, as another child in the same family had died previously of this disease. Stelwagon saw a palm-sized patch of lupus on the arm in a girl ten or twelve years after a vaccination, which was said to have been immediately followed by the development of the lupus, the history being given by a physician, the brother of the patient. All that can be stated as regards the relationship of vaccination to lupus is that vaccination in rare cases in tuberculous individuals may give rise to a lupus at the site of the vaccination. That lupus could occasionally choose a vaccination scar for its seat is no proof that it was caused by vaccination.

**Vaccination and Leprosy.**—Since the general adoption of bovine lymph for vaccination, the question of the invaccination of leprosy has resolved itself into one of academic and retrospective interest. It is well, however, for physicians in leprosy countries, if required by unusual circumstances to employ humanized lymph, to remember that leprosy has probably in isolated instances been conveyed by vaccination. Gairdner, Daubler, and Hillis have each recorded instances of vaccinal leprosy, although some doubt attaches to all these cases.

Beavan Rake and Buckmaster, who have given this matter much study, believe that "the alleged cases of transmission of leprosy by vaccination are open to serious doubt." Hansen, of Bergen, in 1890, made extensive inquiry by circular to all the physicians of Norway as to the occurrence of vaccination leprosy. In not a single case was there any ground to suspect such an origin. This statement is of especial importance, inasmuch as there is much leprosy in Norway and vaccination is practised extensively in that country.

From experimental evidence we would scarcely expect leprosy to be transmissible by vaccination. Inoculation of man and lower animals has been repeatedly attempted by Daniellson, Profeta, Hansen, and others, who inserted fragments of leprosy tissue and injected blood from lepers beneath the skin, but with entirely negative results. There is, indeed, no conclusive case on record of the successful experimental transmission of leprosy.

It is true that lepra bacilli have occasionally been found in vaccine lymph in vesicles raised upon leprous skin, but, as Beavan Rake properly states, no responsible person would think of vaccinating a leper in an affected part and using such lymph for further vaccinations.

**Eczema Following Vaccination.**—Vaccination may now and then induce the appearance of an eczema in a child predisposed to the disease, just as an attack of measles, scarlet fever, or simple teething may act as an exciting cause. Eczema is an extremely common disease among infants and young children, and is particularly referable to faulty feeding and digestive disorders. Of 600 cases of eczema under the care of Dr. T. Colcott Fox, 249, or 41.5 per cent., were seen before the end of the first year; in 40 of these eczema was known to have appeared before vaccination. Doubtless if these had appeared after vaccination, the latter would have been viewed as a probable etiologic factor.

Crocker says: "In no case can vaccination be held responsible where the vaccinia pustule has completely healed before eczema appears."

Eczematous children, if in good health otherwise, may usually be vaccinated without any aggravation of the existing cutaneous disease. Van Harlingen has carefully studied the influence of vaccination on previously existing skin-diseases. He writes: "During the small-pox epidemic of 1872 I observed all cases of skin-diseases coming under my notice in which vaccination had been practised. In a few some aggravation of the symptoms followed; in others, an apparent improvement took place. But in the great majority of cases vaccination did not appear to exercise any influence whatever on the course of the more common diseases of the skin coming under my observation." I have, from time to time, vaccinated persons with eczema and other cutaneous diseases without any injury whatsoever. On the other hand, vaccination has, on a number of occasions, been followed by improvement and even cure of eczemas. Stelwagon says: "I have noted in several instances that amelioration followed vaccination, and in one instance, in a chronic case, a disappearance of the eczema." Duhring, Tait, and others have testified to the occasional curative influence of vaccination on eczema.

While I would not elect to perform vaccination upon a child suffering from eczema, I should not consider the latter condition a sufficient contraindication if small-pox were prevalent.

**Bullous Eruptions (Dermatitis Bullosa; Dermatitis Her-**

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**acute Pemphigus**).—In relatively rare instances eruptions, variously designated as pemphigus, as dermatitis, and dermatitis herpetiformis (Dühring's case), have followed vaccination. While we have found no positive evidence of a causative relationship between vaccinia and these eruptions, they have now been reported by careful observers in a sufficient number of instances to warrant the assumption that the antecedent vaccination has been of some etiologic moment.

They reported a case of this character under the title of dermatitis herpetiformis, in which the lesions were vesicobullous and erythematous, followed by pigmentation.

Dyer reported 2 similar cases under the same title after vaccination. One case occurred three weeks after vaccination, and the other several (?) weeks thereafter. Bowen has placed on record a series of 6 cases of bullous dermatitis resembling dermatitis herpetiformis following vaccination. In 3 of the cases the eruption is stated to have made its appearance within two weeks after vaccination, in 1 within a week, while in 2 it did not show itself until after the lapse of a month. Corlett exhibits two photographs of postvaccinal bullous dermatitis in his work on

the **Acute Infectious Exanthemata**. Stelwagon saw within one year 3 cases of bullous eruption after vaccination, 2 of which he regarded as *acute pemphigus*, and the third as a persistent bullous erythema multiforme or dermatitis herpetiformis. In these cases the vaccination was what is usually described as a "good take," but was somewhat slow in healing, the crust remaining adherent for a long time. The eruption appeared from two to four weeks after vaccination, and had persisted, at the time they were reported—three, four, and eight months, respectively.

Sequeira showed to the Dermatological Society, of London, in 1902, a case of *pemphigus* in a man of thirty-nine years, the eruption appearing three weeks after revaccination. Three vaccine insertions were made, and the first bleb is alleged to have developed at the site of one of these. This was followed in several weeks by bullæ on the arms, and later on the thighs. Cultures from the early blebs were sterile, and inoculations of this fluid into animals were negative.

In all the above cases save the last the patients were children under twelve years of age. The eruption usually appeared from two to three weeks after vaccination, and in no case after six weeks. In most cases the eruption was extensive and of long

duration, with marked tendency to relapse. Some of the cases were cured at the end of three or six months, but some persisted much longer. Pusey's case continued to have relapses for four and a half years.

Bowen says: "The chief features that these cases present in common, and that lead to a conviction that they have a common etiology, are their occurrence in children after vaccination; their course, varying from several months to several years, or perhaps longer; their uniformly vesicular and bullous character, with only occasional evidences of multiformity; the almost complete exemption of the trunk; the characteristic grouping about the mouth, nose, ears, wrists, ankles, and feet, and the very slight prominence of itching or other subjective symptoms." While most of these cases run a relatively benign course, I saw a fatal termination in a case of bullous eruption of the acute pemphigus type. This occurred in a girl of five years, the eruption beginning two weeks after vaccination. I have also seen four other cases of generalized bullous eruption of the type described above, occurring shortly after vaccination.

A remarkable series of *bullous eruptions occurring after vaccination* is reported by Howe, of Boston. Ten cases are referred to, all but one occurring in persons who had been recently vaccinated. The skin lesions began on an average of five weeks after vaccination, the longest time elapsing between vaccination and the appearance of the eruption was sixteen weeks, and the shortest period, three weeks.

All the patients were adults, the ages varying from twenty-one to fifty-two. Six of the ten cases proved fatal; the average duration until recovery or death occurred was six weeks.

It will be seen that these cases present points of variation from the cases described by Bowen. The interval between vaccination and the appearance of the eruption in Bowen's cases was about two and one-half weeks; in Howe's cases it was double this period. Bowen's cases occurred in children; none of them was fatal, and the trunk was, as a rule, free of eruption, which was not true in the cases described by Howe.

Howe was inclined to attribute the eruptions to infectious material introduced at the time of or after vaccination. The cases occurred at a time when small-pox was prevalent in epidemic form, and when thousands of vaccinations were being performed.

While these eruptions, when compared with the number of



vaccinations performed, are extremely rare, no effort should be spared to determine their cause with a view to their future avoidance. It is possible that they are manifestations of an extraneous infection through the vaccine wound. In this connection the investigations of Pernet and Bulloch into the causation of acute pemphigus are of interest. These writers report and analyze 8 cases of acute pemphigus in butchers; 6 of the cases proved fatal in from twenty-four hours to eighteen days. Three patients gave histories of wounds, which continued to suppurate up to the time of the pemphigus outbreak. The period of incubation would appear to be very long if the disease arose from an infection, as is suggested. In the three cases referred to, the wound antedated the eruption three months, two months, and five weeks, respectively. Special interest attaches to one case, in which the patient is alleged to have inoculated himself by contact with a bullous eruption on the udders of a cow.

**Psoriasis.**—Psoriasis is known to have made its first appearance at the site of vaccination, and also as a generalized outbreak after vaccinia. No one, however, who is at all familiar with the disease would look upon vaccination as a cause of psoriasis. It may simply determine the time of outbreak in an individual predisposed to this common skin affection; it is quite possible that those persons who developed psoriasis after vaccination would not have been attacked with this disease until a later period. The occurrence of postvaccinal outbreaks of psoriasis has been noted by—Klamann, 1 case; Campbell, 1 case; Rohé, 2 acute general cases of psoriasis after vaccination; Piffard, 1 case; Wood, 2 cases; Hyde, 1 case; Gaskoin, 5 cases; Chambard, 1 case; and Rioblanco, 1 case.

**Furunculosis.**—Crops of boils have occasionally been observed during the course of and following vaccination. The complication is usually a trivial one, the furuncles disappearing in a short time. Sinigar met with 21 cases of furuncles among 1160 vaccinations in a large institution. The boils develop, as a rule, late in the course of vaccinia. One case appeared on the tenth day, 1 on the sixteenth, 4 on the twenty-second, 1 on the twenty-fifth, 2 on the twenty-seventh, 2 on the twenty-eighth, 4 on the twenty-ninth, 3 on the thirtieth, and 3 on the thirty-fifth day after vaccination. As bearing on the cause of this complication, it is interesting to note that 13 of these cases developed among epileptics, who, as Sinigar remarks, include some of the dirtiest and most troublesome patients in the asylum.

## CHICKEN-POX

*Synonyms.*—Varicella; formerly, Variola crystallina; Variola notha; Variola spuria. Eng., formerly, Water-pock; Glass-pock; Ger., *Varicellen*; *Wasserpocken*; *Wind-blattern*; *Schafpocken*; Fr., *La varicelle*; *La vérolette*; Ital., *Morviglione*; *Ravaglione*.

**Definition.**—Chicken-pox is an acute, highly contagious disease, occurring chiefly in children, characterized by an eruption of vesicular type, appearing in crops and accompanied by mild febrile disturbance, which usually begins with the appearance of the cutaneous outbreak. The lesions dry in a few days into crusts. One attack protects for life in the vast majority of cases.

**Symptomatology.**—*Period of Incubation.*—The period of incubation is ordinarily between fourteen and seventeen days, although it may occasionally be a little shorter or longer.

*Preëruptive Stage.*—In the vast majority of cases chicken-pox is not preceded by prodromal illness. The onset of the constitutional manifestations is usually coincident with the appearance of the eruption. The ordinary history elicited from mothers is that the eruption is the first symptom to attract their attention, and that the children are not ill prior to this time.

In a small percentage of cases some little constitutional disturbance may be observed a day or two before the appearance of the exanthem. This consists of slight rise of temperature, anorexia, vague pains, and chilliness. More common is it to discover these symptoms a half-day or so before the eruption breaks out. During the night preceding the appearance of the exanthem the child may be slightly feverish and restless. But these mild precursory symptoms should not be regarded as representing a prodromal illness, for by this term, as applied to small-pox, is meant a distinct stage, preceding by two or three days, the onset of the eruptive phenomena.

It is important, however, to call attention to the fact that varicella in adults may occasionally be preceded by a prodromal stage. I have seen perhaps a half-dozen of adults suffering from varicella who had distinct prodromata. These symptoms consist chiefly of chilliness, lassitude, anorexia, nausea, slight headache, backache, and some elevation of temperature (101° to 102° F.). These manifestations may precede the appearance of the eruption by two or three days, though more often not longer than twenty-four hours. It is rare to observe high fever, vomiting, severe lumbar pain, and prostration—symptoms which usher in a well-pronounced small-pox.

A *prodromal erythema* is, in rare cases, seen before the appearance of the varicellous eruption, as it is at times before the eruption of small-pox and measles.

I have seen a well-pronounced *scarlatinoid rash* preceding the appearance of the varicella eruption in a child who some days later contracted scarlet fever in an infectious disease hospital where she had been taken through an error of diagnosis. Other writers likewise refer to this prodromal rash.

*The Eruptive Stage.*—As has been stated, the eruption is commonly the first symptom to attract attention to the disease. Synchronously with the appearance of the cutaneous outbreak, or a few hours before or afterward, a varying degree of fever sets in. In some cases this does not reach higher than 99° F.; in others, however, the pyrexial elevation is most marked, even reaching 104° or 105° F.

The temperature commonly falls to normal in the course of one to three days. Where the eruption is copious, however, moderate fever may persist for four or five days. In cases in which the varicellous lesions become secondarily infected, the temperature may continue above normal for a fortnight or even longer.

*The Eruption.*—The eruption of chicken-pox usually appears first on the back or the face, although other regions may be the seat of the initial lesions. Irregular extension then occurs, new lesions developing on different portions of the cutaneous surface. The hairy scalp is nearly always beset with some vesicles.

The *distribution* of the eruption is subject to some variation, but is tolerably uniform in the majority of cases. The trunk, particularly the back, is relatively more profusely attacked than the distal portions of the extremities—the wrists, ankles, hands, and feet. The face usually presents a moderate number of discrete vesicles. It is rare for the face to escape completely, although at times but two or three lesions may be present. At other times, in copious eruptions, quite an abundance of lesions may be seen on the face. The arms and legs are seldom profusely attacked, except in unusually extensive cases.

It has been claimed by some writers that varicellous lesions do not occur upon the palms and soles. It is true that in most cases the palmar and plantar surfaces are free of eruption; but it is by no means rare to find a few vesicles in these regions, and in severe cases the lesions may be fairly numerous.

The palms and soles are much less frequently and less abun-

dantly involved than in small-pox, in which disease some lesions are nearly always present in these regions. The dorsal surfaces of the hands and feet are likewise relatively lightly affected, compared with the general extent of the eruption. In fact, it may be stated that the distal portions of the extremities usually suffer but little in chicken-pox—the eruption prefers the covered surfaces.



Fig. 214.—Chicken-pox, showing lesions in various stages of development (Welch and Schamberg).

The distribution of the eruption may, to some extent, be influenced by irritation of the skin prior to the appearance of the lesions. I have seen a profuse crop of lesions develop over a rectangular area on the sternum over which a mustard-plaster had been applied during the preëruptive stage. Any irritant, by increasing the vascularity of the skin, may attract lesions to

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is irritated. It is not so common, however, to see the eruption from this cause as it is in the latter disease the influence of cutaneous determining an increase of the eruption in a given time by frequent experience.

By the time that the physician is called to see a case of chicken-pox, vesicles are observable upon the body. If the skin is carefully examined early, it will be noted that the lesions are usually preceded by erythematous spots. These are at first to bean-size and in appearance not unlike rose-spots or flea-bites. Very soon the centers of the macules become raised, and small vesicles are formed which rapidly increase in size. In some cases the rosy macules are elevated, somewhat acuminate, and in reality represent papules.

The duration of the transitional lesions before vesiculation takes place is extremely variable. At times some of the lesions of varicella abort in the macular or papular stage, and never go to the development of vesicles. Indeed, Thomas mentions a case the nature of which was verified by the previous occurrence of varicella in a sister, in which erythematous spots (roseolæ) persisted for thirty-six hours and then disappeared without the formation of any vesicles whatever. Varicella without the development of vesicles must, however, be extremely rare.

Varicella vesicles may spring up so rapidly that they appear to arise directly from the normal skin. The lesions often look as if they had been produced by drops of scalding water sprinkled upon the skin. They are superficially situated, differing in this respect from the deeper-seated vesicles of small-pox. The epidermal roof of the vesicle is thin and readily ruptured.

The vesicles of chicken-pox vary greatly in size; they may be no larger than a pin-head, or they may reach the dimensions of a large pea. They are commonly tense, although rarely as hard as the variolous vesicle. Slight traumatism, such as is produced by scratching or the friction of clothing, suffices to rupture the vesicle. The fluid from an early vesicle is clear and watery in appearance; later it becomes turbid and lactescent. The vesicles are round or oval, the shape being somewhat determined by the lines of cleavage of the skin. In the axillary and lateral costal regions they are commonly oval, the long axis corresponding with the direction of the ribs.

Chicken-pox vesicles are commonly surrounded by a *reddish*

*areola*. This may be narrow, measuring but an eighth of an inch; in other cases, however, it may have a breadth of a half-inch or more.

The eruption of chicken-pox appears in *crops*. The first outbreak commonly consists of a dozen or fifteen lesions. After an interval of some hours—usually a day or two—a second crop appears, which often numerically exceeds the first. Twenty-four hours later a third outbreak may occur, and new lesions may thus continue to appear for four or five days or even a week. Owing to the fact that the lesions are of different age, they are seen in varying stages of evolution and involution. There may be present at the same time small, new, tense vesicles, older, drying vesicopustules, and, in addition, dark-colored crusts which represent the remains of the first vesicles. This *multiformity* is one of the most distinguishing features of the eruption of chicken-pox.

The *duration* of the individual lesions of chicken-pox is brief. The vesicles, after reaching the acme of their development, become flaccid, and in from one to three days dry into crusts. The unruptured vesicle desiccates first at its central summit. Lesions which are ruptured by mechanical force give exit to a fluid which forms an irregularly shaped crust.

The fluid contained in the vesicle is at first as clear as water; it later becomes turbid, and, finally, if unruptured, quite purulent. During these changes the vesicle, which has in the beginning a “dew-drop-like” appearance, acquires a grayish or yellowish color.

True umbilication, such as is seen in the early small-pox vesicle, does not occur in chicken-pox. There is sometimes seen a pin-point-sized invagination of the surface of a vesicle, due to the presence of a hair-follicle. Commonly there is observed a central sinking in of some of the vesicles or vesicopustules, due to partial evacuation and central collapse. This is also seen in the late pustular stage of small-pox, and might be called a *secondary umbilication*.

As the vesicles of chicken-pox begin to dry, there not infrequently develops a flat, vesicular, spreading ring upon the border of the crust; beneath the raised-up horny layer is a little puriform fluid. The lesions may, as a result of this process, spread to the size of a silver quarter or half-dollar. This condition is extremely common in small-pox, and has been called “*impetigo variolosa*.” The process being the same in chicken-

pox, the condition might be appropriately designated "*impetigo varicellosa*." The cause of these spreading sores is an infection of the varicellous sites, with streptococci and staphylococci present upon the surface of the skin. In extensive eruptions, where there is much of this impetigo, moderate elevation of temperature may develop, giving rise to a secondary fever.

The *extent* of the varicellous eruption is extremely variable. The total number of lesions in some cases may amount to but a half-dozen; on the other hand, they may cover almost completely the entire cutaneous surface, and number hundreds, or even thousands. Thomas says: "As many as eight hundred have been counted or estimated." In a copious eruption in



Fig. 215.—Chicken-pox, showing umbilicated vesicles (pseudo-umbilication) and lesions in different stages of development (Welch and Schamberg).

a young boy I counted 1400 lesions; shortly afterward, in an older lad convalescent from scarlatina, I observed a much more extensive eruption, in which 3000 lesions were estimated to be present.

While neighboring and closely set vesicles may occasionally coalesce, one never sees a confluence of the lesions such as is observed in small-pox.

**Scarring after Varicella.**—It is not uncommon for some varicella lesions to be followed by scars. Indeed, it is rather the rule for patients to have one or several cicatrices which persist after the disappearance of the eruption. These are from pin-head- to pea-sized, round or oval, and excavated to

a variable degree. In severe cases the number may reach a half-dozen or a dozen or more. They are never, however, as numerous as is seen in small-pox. The scars result from a destruction of the papillary layer of the true skin; this may be due to a secondary infection as a result of scratching, but it may occur entirely apart from this cause. Chicken-pox vesicles at times break down early and produce a necrosis of the underlying corium; the ulcer left heals with the formation of a depressed scar. Occasionally a hypertrophic scar or sort of keloid forms at the site of these losses of tissue.

The *mucous membranes* are not infrequently the seat of varicellous lesions. It is quite common to find a few vesicles upon the soft and hard palate, and these, in doubtful cases, are of diagnostic importance. Lesions are also occasionally noted upon the buccal mucous membrane, tongue, and posterior pharyngeal wall. Situated in these regions the flaccid roof of the vesicle soon ruptures, leaving at first a grayish pellicle of epithelial débris, and later a circumscribed superficial abrasion, surrounded by a reddish areola, and resembling to some extent the sore of aphthous stomatitis. The eruption in the mouth is usually scant, even in cases characterized by an abundant cutaneous outbreak.

**Varicella in Adults.**—Varicella is certainly not so rare in adults as has been generally maintained. The assertions of many writers of prominence have caused varicella in adults to be regarded as a *rara avis*. Thomas, whose teachings are based upon a large and well-digested experience, states: "Varicella is a disease of childhood, and attacks by preference young children and even sucklings. In children over ten years of age attacks are infrequent, and *I never saw an adult suffering from varicella.*" And, again, "the predisposition (to varicella) is wont to vanish of itself spontaneously about the eleventh year." Von Jürgensen remarks: "With regard to the differences between variola and varicella, it is important to state that the latter is, if not wholly, yet practically, limited to the age of childhood—the first ten years of life"; and, further on, "varicella is a disease which is quite peculiar to the age of childhood." Jonathan Hutchinson, in a wide-spread experience, saw one or two cases about the age of twenty, and states that "a point of great interest in varicella is the almost complete immunity of adults."

Within the past seven or eight years I have seen about 25



cases of varicella in adults, the oldest patient being forty-eight years old. My friend and colleague, Dr. William M. Welch, has likewise seen a considerable number of cases.

The underestimated frequency of chicken-pox in adults is further attested by the figures which Wanklyn presents of the cases of varicella sent to the diagnosing station of the Asylums Board of London during the small-pox epidemic of 1901-02. Of 200 cases of chicken-pox which were seen, 16.7 per cent., or 33 cases, were over eighteen years of age.



Fig. 216.—Well-marked chicken-pox in an adult man (courtesy of Dr. E. W. Ruggles).

It is not rare for adults to feel ill a couple of days before the appearance of the varicellous eruption. There may be malaise, chilliness, headache, and some backache, nausea, and moderate rise of temperature to  $101^{\circ}$  or  $102^{\circ}$  F. These symptoms are similar to those observed in small-pox, but are less severe. High fever, intense backache, repeated vomiting, and prostration are absent in chicken-pox. Every now and then one will see cases of varicella in adults in which quite indurated papules will be observed on certain parts of the body. It is particularly

on the thick skin of the forehead that these are seen. Typical varicellous vesicles, however, will be found elsewhere upon the cutaneous surface. A significant sign in many of these cases is the presence of vesicles here and there which have undergone rapid rupture and crusting, with the production of a blackish or bluish-black scab depressed in the center; the borders of these lesions will be vesicular. They present the appearance of having been excoriated by scratching.

**Complications and Sequelæ of Chicken-pox.**—Varicella is attended by comparatively few complications. It is extremely common for the partially dried vesicle to spread upon the border in the form of flat pustules, or blebs of considerable size may be formed, which dry into yellowish, friable crusts. These spreading pustules may attain the diameter of a silver half-dollar. This peripheral extension is due to infection of the lesion with the pyogenic organisms commonly found upon the skin, and might appropriately be designated *impetigo varicellosa*. Most well-marked cases of chicken-pox show some lesions which become the seat of impetigo.

Trousseau states that in an epidemic of chicken-pox which prevailed in the Necker Hospital the fever ceased when the malady began, and during from fifteen to forty days *pemphigoid blebs* appeared on different parts of the body, leaving, on the surfaces which they had occupied, ulcerations exactly like those of pemphigus, which ulcerations continued for six weeks or two months.

As a result of pyogenic skin infection the neighboring glands may become enlarged, and in rare cases undergo suppuration. *Boils* and *subcutaneous abscesses* may occur as a result of pyogenic infection. These are not infrequently seen upon the scalp, although any portion of the cutaneous surface may be attacked.

*Erysipelas* and *pyemia* have been recorded in a few instances.

**Disseminated Gangrene.**—Literature contains numerous references to a serious complication of chicken-pox which was called by Hutchinson *varicella gangrænosa*. This gangrenous condition is not to be regarded as a variety of varicella, or even as a complication peculiar to this disease. It may occur also in vaccinia, variola, scarlatina, typhoid fever, and in various pustular dermatoses; it is true, however, that it most commonly complicates varicella.

In mild cases but one or several varicellous lesions may

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is; in more extensive cases many of the vesicles are necrotic. The vesicle may either become converted into a bulla, the gangrenous process beginning beneath this terminal elevation, or the vesicle may dry into a hard crust which enlarges upon the periphery. Upon removal of the crust a deeply margined, punched-out, freely discharging ulcer is left.

A dusky-red areola surrounds the ulcer or eschar. In extensive cases the temperature rises to  $104^{\circ}$  or  $105^{\circ}$  F., and the patient rapidly sinks. Lung complications, particularly pulmonary infarction, are common. Mild cases of gangrenous chicken-pox may recover. The affection is most common in debilitated infants, more especially those in whom the varicella is preceded by some other illness. In Griffith's case the chicken-pox was preceded by measles, diphtheria, and pneumonia.

Cases of gangrenous varicella have been reported by Hutchinson, Demme, Abercrombie, Andrew, Crocker, Buchler, Jamieson, Wenhardt, Payne, Staniforth, Haward, Vierordt, Griffith, Mackwood, Silver, Woodward, and others.

Synovitis, arthritis, pleurisy, nephritis, laryngeal stenosis, onchitis, and pneumonia are rare complications.

**Etiology.**—Chicken-pox is essentially a disease of early childhood, although it occasionally occurs in adult life. Susceptibility is not influenced by race, climate, or season. Second attacks of the disease are of great rarity.

There is a difference of opinion as to the inoculability of varicellous fluid, although Steiner's attempts are alleged to have been successful.

**Pathology.**—Unna excised a characteristic "chicken-pox" lesion from an eight-year-old boy on the second day of its existence. The following description is condensed from Unna's detailed findings.

In contrast with the central depression in the variolous vesicle the vesicle of varicella is tent-shaped, with the central point at the summit. The lateral walls rise obliquely from a broad base toward the roof, which is formed by a few stretched horny scales. From these, cellular partitions radiate downward as in small-pox. The chicken-pox lesion is consequently divided like the small-pox lesion, but the point where the septa join lies not in the center of the base, but in the covering or roof. The cavity proper occupies only the upper part of the much widened prickle-layer. It is limited beneath by the deeper strata of the prickle-layer, which show pathologic

changes. In the center the cavity extends downward to the papillæ of the corium, which are swollen and enlarged and which project into the cavity. The roof of the vesicle is formed by the original horny layer, with the addition of a few layers of flattened transitional epithelium.

The degenerative changes in the cells of the rete mucosum are typically represented in varicella, and can be better studied in this disease than in variola, for in the latter affection the onset of suppuration obscures the process. The early pus-formation and the slowness of the process are the chief features which distinguish the cavity formation in small-pox from that in chicken-pox.

Extensive *fibrinoid metamorphosis* of the epithelium takes place, as in variola. The varicellous process commences with *reticulating* liquefaction of a few prickle-cells of the central and upper prickle-cell layer, in the middle of the first appearing congestive spot. The completely liquefied, confluent cavities rapidly dilate to form the vesicles; the persistent unliquefied epithelium is compressed to form the septa, as are the cells above to form the cover. While this separate cavity chiefly enlarges by swelling upward, the *ballooning* colliquation proceeds in all the epithelial cells of the base, especially at the center of the pock, then at the lateral margin, and in all the healthy epithelial cells of the center.

Many of the colliquated cells assume the form of peculiar giant-cells. Even the septa which run through the vesicle are frequently surrounded by ballooned giant-cells. At the base of the chicken-pox lesion the balloons form a loosely connected covering which runs over the central papillary apices, often only in a single layer. The contents of the vesicle at the height of its development consist of finely granular or coagulated fibrin, inclosing a few fibrinously degenerated, compressed or ballooned epithelia, and almost no wandering cells. The cutis shows a marked dilatation of the blood-vessels, a moderate serous saturation, and a considerable enlargement and multiplication of the cells about the vessels; the emigration of white corpuscles is reduced to a minimum.

Notwithstanding its appearance, the vesicle of chicken-pox is not unilocular. The absence of resultant scarring is due to the superficial position of the pock, the non-occurrence of suppuration, and the early repair by young epithelial cells.

**The Diagnosis of Chicken-pox.**—*Small-pox.*—Chicken-pox

may usually be distinguished from small-pox without much difficulty. In exceptional instances, however, the diagnosis may present perplexities which may cause even a physician experienced in these diseases to delay in pronouncing definitely as to the nature of the disease. Errors may occur through regarding a mild small-pox as chicken-pox, or looking upon a severe varicella as variola. The points of differential importance are as follows:

*The Vaccinal Condition of the Patient.*—If a child under five or six years of age presents an eruption which exhibits features both of chicken-pox and of small-pox, the presence of a typical vaccinal cicatrix would constitute strong presumptive evidence against the variolous nature of the exanthem; for successfully vaccinated children of this age do not acquire small-pox save under rare and extraordinary circumstances. The same evidence would obtain in an adult successfully vaccinated within a similar period of time.

*Initial Symptoms.*—The appearance of the small-pox eruption is preceded two or three days by an illness characterized in its most complete form by chills, fever, headache, back-ache, vertigo, nausea and vomiting, prostration, and general pains. The more severe the oncoming eruption, the more pronounced are these symptoms apt to be. The syndrome is often incomplete, the invasive illness presenting but a few of the above-mentioned symptoms. In exceptionally mild cases one may not be able at all to elicit a history of a prodromal stage. It is extremely uncommon, however, for this to occur, and the existence of premonitory symptoms should always be regarded as of great differential importance.

Except for occasional malaise, a half-day or so before the appearance of the chicken-pox eruption, there is, in the vast majority of cases, no prodromal stage.

*Constitutional Symptoms.*—The fever and prostration in the eruptive stage are usually more severe in small-pox than in chicken-pox. This is not an invariable guide, however, as severe cases of varicella may be accompanied by higher temperature than very mild cases of small-pox.

*Distribution of the Eruption.*—It is a well-known and important fact that the small-pox eruption attacks with predilection the face and distal portions of the extremities. Upon the trunk, and especially the abdomen, the lesions are nearly always more sparse. In chicken-pox the eruption is usually most profuse on the trunk, particularly the back, and rela-

tively sparse on the wrists, hands, feet, and face. In general it may be stated that small-pox prefers the exposed surfaces and chicken-pox the covered.

It has been stated that chicken-pox does not attack the palmar and plantar surfaces. This statement is erroneous, inasmuch as the palms of the hands and soles of the feet are every now and then attacked in pronounced cases. Of course, one never sees such a profusion of lesions in these regions as is observed in small-pox.

*Extent of the Eruption.*—The number of lesions upon the skin should not be regarded as important evidence. I have seen an unvaccinated child with but five variolous lesions upon the entire cutaneous surface. On the other hand, I have noted the presence of 1400 lesions in one case of chicken-pox, and 3000 in another.

*Character of the Lesions.*—In small-pox the eruption begins as firm papules, which slowly increase in size and develop into vesicles and pustules. Not all variolous papules are shotty, but they are more deeply seated and have a more infiltrated base than the chicken-pox lesions. The variolous vesicles are often harder than the papules. They are moderately uniform in size, and are often, although by no means always, umbilicated. The vesicles are multilocular, and difficult to rupture with the finger-nail.

Chicken-pox lesions may begin as maculopapules, but within a few hours become frankly vesicular. The epidermal roof is thin and easily broken, permitting the exit of a clear, watery serum. With the collapse of the vesicle the infiltration seems to disappear and a superficial excoriation is often left. Chicken-pox lesions vary greatly in size, some being as small as a millet-seed and others as large as a finger-nail. They do not become umbilicated, save by central caving in or desiccation. The early drying, with the production of a depressed, blackish crust in the center and irregular puckering of the vesicle or pustule on the periphery, is highly characteristic of chicken-pox.

It is not rare, in an extensive eruption of varicella, to find one or several vesicles which resemble variolous vesicles, and, on the other hand, in small-pox occasionally to see a few superficial vesicles which resemble those of small-pox.

*Manner of Eruption.*—The eruption of small-pox comes out without interruption in the course of twenty-four to forty-eight hours. The lesions show, therefore, a quite uniform development. (It should be remarked, however, that the

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On the face is always a little in advance of the development elsewhere.) The chicken-pox eruption comes out in crops on successive or alternate days, and the lesions may be in varying stages of development. The coexistence of recent tense vesicles, older puckered vesicopustules, and dried crusts is highly characteristic of the disease.

*Course of the Eruption.*—Small-pox lesions undergo a gradual evolution from papule to crust in the course of ten to twelve days—in modified cases, five to six days. Chicken-pox lesions last from two to four days and then crust. The crusts of small-pox are dense and compact, while those of chicken-pox are thin and friable. The presence of numerous hard, mahogany-colored crusts embedded in the horny layer of the palms and soles bespeaks small-pox.

There is no one characteristic symptom on which a differential diagnosis between small-pox and chicken-pox can be based. The case is to be viewed in all its aspects, and a diagnosis made from the history and the associated local and constitutional manifestations. A due sense of proportion should be exercised in attributing proper weight to the presence and absence of the various symptoms. Even when this is done, there are occasional cases in which twenty-four hours' delay and observation are desirable in order definitely to establish the diagnosis.

*Impetigo Contagiosa.*—If chicken-pox is seen after the desiccation of the vesicles, the disease may be confounded with impetigo. Indeed, impetigo is commonly ingrafted upon a varicella, in which event the lesions spread upon the borders in the form of a vesicular ring. Impetigo contagiosa is characterized by the formation of vesicles or blebs which rapidly become pustular, rupture, and form superficial crusts. The face is the seat of predilection, and is usually exclusively affected, although the hands, and in rare cases the trunk, may present lesions. The vesicles are thin roofed and flaccid, seldom exhibiting the tenseness of varicella vesicles. The patient, as a rule, suffers no constitutional disturbance. The mucous membrane of the mouth is exempt. The lesions do not appear, as in varicella, in several crops, but increase irregularly as a result of finger inoculation. The disease is caused by inoculation of the skin with certain pyogenic organisms.

Varicella runs a briefer course, and the lesions disappear in a short time without local treatment; the existence of antecedent cases of chicken-pox, or the development of later ones

after an interval of two weeks, constitutes strong corroborative evidence.

**Prognosis.**—Chicken-pox is, with the possible exception of rubella, the mildest of the acute exanthematous diseases. As Trousseau remarks, patients never die of varicella *per se*, although deaths in rare instances have occurred from complications.

**Treatment.**—The constitutional symptoms of varicella are ordinarily so mild as to require no internal treatment. Where there is febrile disturbance, children should be kept in bed and upon a bland diet.

The local treatment is of considerable importance. To prevent scars, the best local application for facial lesions is tincture of iodine diluted one-half with alcohol. This should be painted upon the lesions daily. When the vesicles become distended with pus, particularly those upon the face, they should be evacuated and cleaned with a weak antiseptic solution. The following ointment will be found useful in preventing secondary infection of the lesions:

R. Acidi carbolici..... gr. x;  
Hydrargyri chlorid. mit..... gr. xv;  
Pulv. amyli } .....  
Pulv. zinci oxidi } .....  
Petrolati.....

As has already been stated, some chicken-pox lesions are followed by indelible scars; these may be due to an early necrosis involving the papillary layer of the skin, in which event they cannot be prevented. In other cases the scars are due to a slow ulceration, the result of pyogenic infection of the lesions. Scratching is liable to produce scars by infecting the skin. In young children the finger-nails should be closely trimmed to prevent traumatism from scratching; when scratching cannot be otherwise controlled, the hands should be inclosed in muslin bags attached firmly about the wrists, or the elbows should be immobilized by splints. Doubtless the rare cases of varicella gangrænosa are due to infection of the skin. It is important to keep the hands and the entire body scrupulously clean.

To relieve the itching, which is not infrequently present, the following lotion will be found efficacious:

R. Acidi carbolici..... gr. xxx-3j;  
Glycerini..... 3j;  
Spir. vini rect..... f3ss;  
Aquæ..... q. s. ad f3vj.—M.

Sig.—Use locally.



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### SCARLET FEVER

*Synonyms.*—Scarlatina; Ger., *Scharlach*; Fr., *La Scarlatine*; Ital., *Scarlatina*; Span., *Escarlatina*; L., *Febris rubra*.

**Definition.**—Scarlatina is an acute, specific, infectious disease, characterized by a sudden onset with high fever, headache, vomiting, and sore throat, followed on the second day by a generalized punctiform rash which later gives rise to desquamation.

There is a tendency to the development of cervical abscess, otitis media, and nephritis. One attack usually confers immunity for a life-time.

**Etiology.**—Although the identity of the causative agent of scarlet fever has not been definitely established, there can be no doubt that the disease is due to a microparasite. The disease is, as a rule, directly contracted from a patient suffering from the disease, but may be conveyed by a third person or by infected objects. The scarlet fever contagium may cling persistently and for a long period of time, to the sick-room and to the articles contained therein. The susceptibility to

scarlet fever is by no means as universal as that which exists toward small-pox and measles. Many children escape scarlet fever, although intimately exposed to it; at some subsequent exposure the disease may be contracted. Infants under one year of age, and more especially those under six months, exhibit a lessened disposition to acquire the disease. Adult life confers a relative immunity, the vast majority of persons of this age-period failing to take the disease. Children from two to five years appear to offer the greatest susceptibility. In this country scarlet fever is most prevalent during the late winter and early spring months. Negroes are less susceptible to scarlet fever than whites, and the mortality-rate among them is lower than in the Caucasian race.

Scarlet fever has been inoculated with mucus from the mouth and throat of scarlatinal patients; it seems thus proved that these cavities harbor the *causa causans* of the disease. The presence of the infectious principle in the skin has not been proved.

The scarlatinal poison is ordinarily received into the system through the upper air-passages; it is believed by many that the throat, especially the tonsils, constitutes the chief channel of

infection. It would seem that the genital tract in puerperal women and cutaneous wounds may also offer avenues of ingress. *Surgical operations* about the mouth, nose, and throat are not infrequently followed by scarlet fever. *Cutaneous burns* apparently increase susceptibility to this disease.

**Symptomatology.**—The period of incubation is ordinarily between three and seven days, although in rare cases it may be only twenty-four hours, or, on the other hand, longer than a week.

The onset of the disease is sudden. The earliest symptoms are indisposition, fever, headache, vomiting, and sore throat. In children vomiting is the earliest as well as the commonest of the invasive symptoms. Older persons often complain first of sore throat. Convulsions may occur in infants.

The temperature rises rapidly, often reaching  $102^{\circ}$  to  $104^{\circ}$  F. or more, in the course of a few hours. The fever remains high ( $104^{\circ}$  F. or thereabouts) until the eruption has fully developed. With the fading of the rash there is a gradual decline in the temperature. Severe cases may be accompanied by hyperpyrexia, the thermometer registering  $105^{\circ}$  or  $106^{\circ}$  F. On the other hand, in mild cases there may be but slight elevation of temperature. The pulse increases in frequency and, compared with the temperature, is often disproportionately rapid. The radial pulsations may number in children 140 to 160 a minute, and in adults, 120 to 140.

Headache and vertigo are common, and the patient may be alternately somnolent and restless. Thirst is often intense. The patient is greatly prostrated, and presents the facies of a very sick person. The skin is hot and dry, the eyes dull and listless, and the face flushed.

*Sore throat* is an early and prominent symptom. On inspection, general faucial redness is observed, involving particularly the uvula, tonsils, and soft palate. When the cutaneous eruption begins to manifest itself, the redness increases and there develop edema and swelling of the mucous tissues. At times a thin, grayish or yellowish film of exudate may be seen on the swollen tonsils. Often the soft palate, uvula, and buccal mucous membrane show a punctated redness similar to that later observed upon the skin. In mild cases nothing may be seen save a general redness.

The *tongue* is, as a rule, heavily covered with a grayish-white fur at the onset of an attack of scarlatina. Soon the tip and

edges assume an angry, reddish coloration, and a roughened or granular appearance.

At this time also the fungiform papillæ on the dorsal surface of the tongue become swollen and prominent, and peep through the surface coating. Usually on the fourth day or thereabouts lingual desquamation takes place, and the coating is cast off, disclosing to view a red, raw-looking, often glazed surface, studded with enlarged papillæ.

At times the papillary elevations are numerous and small, looking like the granulations in a wound. At other times they are scattered and more prominent. This condition of the tongue



Fig. 217.—Scarlet fever—enlargement of the lingual papillæ (Welch and Schamberg).

is of considerable diagnostic importance, and has been variously described as the "raspberry," "strawberry," or "cat's tongue." It should be remembered, however, that mild cases of scarlatina occasionally exhibit no abnormality of the tongue whatsoever.

If the gums are inspected from the second to the fifth day, there will oftentimes be seen *milk-white patches* which look much as if they had been produced by the application of pure carbolic acid. These represent a desquamation of the epithelial covering of the gingival mucous membrane, and can readily be peeled off by slight friction. This process occurs at times in measles, and perhaps also in other infections in which there is congestion of the oral mucous membrane.

*The Stage of Eruption.*—The rash usually appears within twenty hours of the onset of the illness. The exanthem of scarlet fever ordinarily begins upon the neck and subclavicular regions, and then spreads rapidly to the chest, face, abdomen, arms, and legs. A variable time elapses in different cases before the acme of the eruption is reached. The milder efflorescences reach their height earlier than those of greater intensity. In severe cases the rash may take until the third or fourth day before its greatest intensity is attained.

The *color* of the scarlatina exanthem varies in different individuals, and is extremely difficult to depict in words. It has been variously designated by writers as scarlet, bright-red, boiled-lobster tint, raspberry-juice color, rose-colored, wine-colored, etc. It is a matter of daily observation that the rash in fair-skinned persons is brighter than in those of swarthy complexion, whose skin contains a greater amount of epidermal pigment. In general, the scarlatinal rash is reddish, sometimes bright, but more often *dull or dusky red*. Sometimes the eruption is so brownish-red, particularly in dark-complexioned individuals, as to almost approach a bright terra-cotta tint. More rarely the element of blue is so well marked, particularly in dependent areas of skin, as to be quite purplish, owing to the venous congestion. The color varies not only in different persons, but at different periods in the same individual. A bright eruption commonly becomes dusky before it fades.

When the scarlatinal exanthem is viewed at a little distance, it gives the impression of a uniform reddish blush. When, however, the skin is closely scrutinized, it is seen that it is made up of innumerable reddish points or puncta. They are of a deeper tint than the skin intervening between them.

At times eruptions are seen in which the skin between the puncta is of normal coloration. This appearance may occasionally be noted during the evolution of the exanthem. Ordinarily the points of greatest color intensity are surrounded by areolæ of somewhat brighter hue. When these coalesce, as is usually the case, a diffuse eruption is presented, the puncta being scarcely distinguishable through the obliteration of contrast. At times the areolæ are narrower, exhibiting a little intervening normal skin and giving the eruption a more or less *speckled* appearance. In other cases, with larger pale areas, a mottled appearance is noted. Finally, there may exist large, irregular patches of healthy skin, particularly on

the arms, legs, and buttocks, producing so marked a *blotchiness* of the exanthem as to suggest a stronger semblance to measles.

The scarlatinal eruption frequently exhibits small pin-point-to pin-head-sized, reddish elevations, which occur most commonly at the sites of hair-follicles. These are frequently seen upon the extremities, particularly the lower, but may also appear upon the trunk. This condition was called by the older writers *scarlatina papulosa*.

In addition to these elevations a general *goose-flesh* condition of the skin is not infrequently observed. This is best marked upon the abdomen and chest, and is characterized by numerous pin-head-sized papules bearing a close resemblance to the



Fig. 218.—Scarlet fever—hands showing absence of eruption where garters had been worn (Welch and Schamberg).

"*cutis anserina*" evoked in the normal skin by exposure to either extreme of temperature. These papules may be faintly red or of the normal skin hue. They differ from ordinary goose-flesh in that they persist usually for some days. At times this condition is so pronounced as to impart to the skin a "nutmeg-grater" feel and appearance.

In the older descriptions of scarlet fever one reads of the occurrence of sudamina at the height of the efflorescence. Inasmuch as during this stage the skin is hot and dry, with no tendency to sweating, one would not expect to find sudaminous sweat-vesicles. It is extremely common, however, to find in well-developed rashes innumerable *miliary vesicles*. To this

condition the term *scarlatina miliaris*, or *scarlatina vesicularis*, has been given. The vesicles are conical, epidermal elevations, pin-point- to pin-head-sized (size of millet-seed), with turbid or lactescent contents and usually disseminated, although occasionally occurring in groups. They are commonly situated on the abdomen and chest, and to a lesser extent on the extremities. The region in which they are frequently most copiously present



Fig. 219.—Scarlet fever—punctated eruption on trunk; miliary vesicles about axilla (Welch and Schamberg).

is the mons veneris, for here the erythema is often intense. In this region they are prone to develop into minute but well-marked yellowish pustules.

Rarely, contiguous vesicles may coalesce, forming blebs of the size of a pea or larger, constituting the *scarlatina pemphigoidea* of the older writers.

Miliary vesicles may be seen in nearly all well-pronounced scarlet-fever eruptions. They are much more frequent than

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posed, being often overlooked on account of proportions. A magnifying-glass will often bring them into view when they are not clearly perceived by the unaided eye. The vesicles are more conspicuous in severe forms than in mild rashes. In decidedly exceptional cases they may be so pronounced as to overshadow the scarlatinal exanthem and puzzle the physician in the diagnosis.

During the period of fading and decline of the eruption, coin-sized or larger flat epidermal elevations are often noted. These are whitish, and suggest sudamina, the contents of which have been absorbed, for one seldom, if ever, discovers fluid in them. They may be readily opened with a needle and resemble pea-pods. The exfoliation of the summits of these elevations and of the miliary vesicles constitutes the beginning of desquamation on the trunk.

The character of the *eruption on the face* varies somewhat. In some cases this region remains entirely free. More commonly the temples and cheeks are the seat of a deep-red flush; it is probable that this flushing is often associated with the true fever, for it is not rare to see the face desquamate profusely. The forehead often shows redness, but this is usually less intense than on the lateral aspects of the face. The tip and alæ of the nose, the upper and lower lips and the chin commonly appear preternaturally pale. This *circumoral pallor*, defined by the marked flushing of the cheeks, gives the patient a most curious appearance, which, if not peculiar to, is always strongly suggestive of, scarlet fever.

On the *arms and legs* the rash exhibits no peculiarities save its likelihood early to involve the flexures of the joints (groins, popliteal space, and elbow flexures) and its greater tendency to be *blotchy*. Upon the palms and soles the eruption is usually diffusely red, without any puncta.

When pressure is made upon the scarlatinal rash, a momentary pallor is produced, then a return of redness, and finally a gradual paling again, which persists for some minutes. I have seen, on the legs, pale bands persist where garters had previously been worn. Indeed, one may inscribe a name upon the efflorescence with a blunt instrument, and in a few moments note the white letters stand out upon a red background. This is the reverse of the ordinary dermatographism, and might be termed *anemic dermatographism*. This is a vasomotor pecu-

liarity, but it is doubtful whether it possesses any reliable diagnostic value.

*Itching* is not infrequently experienced by scarlet fever patients. While in most cases it is insignificant or entirely absent, it is occasionally quite severe. It may be noted during the early evolution of the eruption, at its height, or during the decline, just before desquamation sets in.

In intense eruptions there is often some *edema* and *swelling* of the skin, accompanied by an exaggeration of the lines of



Fig. 220.—Scarlet fever—desquamation upon face. This developed on the fourth day (Welch and Schamberg).

cleavage. The skin, under such circumstances, is thickened and shows wrinkling of the epidermis.

On the other hand, the eruption may be so *mild* as to make the diagnosis difficult and even impossible. Indeed, in rare cases the eruption may be absent altogether.

The eruption persists at its maximum intensity but for a brief period—from a few hours to a day or two—and then gradually fades. Much variation is shown as to the entire duration of the exanthem; ordinarily the eruption lasts from *three to seven*



*days*, but its duration may be shorter or longer than this period. Cases doubtless occur in which the eruption is of such brief duration as to escape notice entirely; instances of scarlet fever without eruption, but followed by desquamation, are probably to be accounted for by evanescent undiscovered eruptions.



Fig. 221.—Scarlet fever—desquamation upon neck (Welch and Schamberg).

In some cases a temporary *fading* or *recession* of the rash occurs. It is not rare for the exanthem to be more vivid in color at certain times. The rash is not infrequently brighter in the evening than during the day. It is more rare for the eruption to recede completely and later reappear.

*Desquamation.*—Desquamation begins upon those parts of the cutaneous surface which were first the seat of the exanthem. Where the face has presented much eruption, or even intense flushing, a branny desquamation will often be noted as early as the fourth day. Almost simultaneously a similar epidermal exfoliation occurs upon the neck and upper portions of the chest. This process is commonly inaugurated about the sixth or seventh day of the disease.



Fig. 222.—Scarlet fever—unusually pronounced desquamation after a well-marked attack (Welch and Schamberg).

If one watches for the first evidence of desquamation on the trunk, it will be noticed as a number of discrete, pin-point-sized, powdery scales. These represent the desiccated summits of the miliary vesicles. In a day or two these small scales are cast off, leaving minute, jagged rings of desquamation. The horny layer is now lifted off by centrifugal extension of these rings, which grow progressively larger. On meeting enlarging rings of neighboring lesions they produce gyrate and geographic

configurations resembling the contours of maps. In this manner the upper layer of the corneous stratum is removed.

Upon the hands and feet the desquamation is of quite a different character. Here the horny layer is shed, either in large flakes or more rarely *en masse*, with the result that a partial or complete epidermal cast is thrown off, resembling a glove or a slipper. It is seldom that these epidermal gloves remain intact until complete exfoliation unless the hands are kept bandaged.

The most typical and characteristic scarlatinal peeling, however, is that which begins about the free border of the nail.



Fig. 223.—Scarlet fever—profuse desquamation after an intense eruption (Welch and Schamberg).

Just beneath the edge of the nail a fissuring or cleavage of the horny layer takes place, the latter being stripped back toward the finger-tip and thence up the finger. The peeled portion of the finger exhibits to view the new, soft, pinkish skin, whereas beyond is seen the harsh, horny cuticle. This desquamation, originating in *subungual cleavage* of the epidermis, is of considerable diagnostic import; it is seen also upon the toes, but not so well pronounced.

Before desquamation begins upon the hands the skin becomes harsh, dry, and wrinkled. The occurrence of peeling may, by attention to this condition, be determined in advance.

In some cases, particularly when the rash is extremely mild, desquamation may be so slight as scarcely to be perceptible. Indeed, in rare cases it may be entirely lacking.

On the other hand, it may be so intense as to resemble the affection known as exfoliative dermatitis. This is the form which is apt to be attended with exfoliation of large strips of epidermis and casts of the feet and hands. Other epidermal structures, such as the hair and nails, occasionally become affected, in which event the hair and nails are shed. Where



Fig. 224.—Scarlet fever—desquamation in large flakes upon the hands (Welch and Schamberg).

the nails are not actually thrown off, they may show a transverse furrow, which in the course of time grows out of the free edge.

The duration of desquamation cannot be stated in definite terms, as it is subject to the greatest variation. There are mild cases in which no desquamation can be detected after two weeks. On the other hand, severe cases, and even mild cases, may continue to desquamate for seven, eight, or nine weeks. Indeed, where the rash has been intense, a second

and third scaling may, in rare cases, occur after the first desquamation has been completed. The average duration of desquamation is about six weeks.

If the skin is closely inspected during the height of the eruption, distended cutaneous capillaries will often be found to be visible to the naked eye. It is not uncommon in intense rashes to note the presence of scanty, claret-colored, petechial extravasations into the skin. These are noted particularly in regions where the skin is thin and tender, such as on the neck, axillary folds, inner sides of the arms, flexors of joints,



Fig. 225.—Epidermal casts of the hands shed from a fatal case of scarlet fever. Compare with casts from a "case of exfoliative dermatitis" (p. 152) (Welch and Schamberg).

etc. These hemorrhages betoken intensity of the eruption rather than malignity of the infection.

*Lymphatic Glands.*—Intumescence of the lymph-glands may be regarded as an almost constant accompaniment of scarlet fever. The subcutaneous lymph-nodes in the maxillary, sub-maxillary, cervical, axillary, inguinal, and epitrochlear regions are all enlarged. The lymphoid tissues of the liver, spleen, and intestines are likewise hyperplastic.

In *anginose* scarlet fever there is an excessive development of all the symptoms, the throat changes being characterized by particular severity. High temperature, prostration, and marked nervous symptoms are observed. The throat is in-

tensely inflamed and covered with a dark, membranous deposit. A mucopurulent discharge commonly issues from the nose. Otitis media with suppuration occurs early; the glands of the neck are tremendously swollen. Ulceration and necrosis of the mucous membrane of the mouth and throat may take place. The rash in these cases is apt to be intense.

In *malignant* scarlet fever, fortunately, a rare disease, the onset is sudden, with extremely high temperature and profound nervous symptoms. The patient is often overwhelmed by the poison at the onset. The throat symptoms are severe. The rash is irregular in distribution; it is sometimes livid and beset with petechiæ and vibices. In rare cases death may occur before the appearance of an eruption.

*Hemorrhagic* scarlet fever is ushered in by high fever, severe prostration, and marked brain symptoms. A dusky red erythema, usually imperfectly developed, is seen upon the skin, and is soon followed by the appearance of scattered, wine-colored or purplish, pin-head- and larger sized petechiæ and, later, ecchymoses. Bleeding occurs from the various mucous membranes.

*Partial Eruptions.*—In some very mild cases the exanthem may be *poorly developed and limited* to certain regions of the body. The associated fever and angina are often correspondingly slight. Gregory saw cases in which the exanthem appeared only on the thighs. Thomas speaks of cases in which it is limited to one side of the body, or the upper or lower half of the body or the lower extremities. Glaser described a form in which the exanthem appears as a broad band around the neck or around the joints. Wildberg also noted it in the latter situation. Zehnder observed it in the form of red spots scattered over the body.

Poorly developed eruptions are not always indicative of benign attacks, for the exanthem is sometimes partial in severe and even malignant cases of scarlatina.

*Secondary Septic Erythema.*—Occasionally in severe cases of scarlatina of the anginose variety a dusky-red, maculopapular erythema is observed to occur in the second or third week of the disease. The eruption is most commonly seen about the extensor surfaces of the knees and elbows, although it is at times more extensive and may involve the face and a considerable portion of the surface of the trunk and extremities. This erythema usually persists for two or three days. It

occurs in bad septic cases with purulent rhinitis, sloughing throat, and discharging ears, and is of evil prognostic import.

*Recurrent Eruptions and Relapses.*—It is well known that the exanthem of scarlet fever may, in rare instances, disappear and recur in a few days; it is manifestly improper to regard the reappearance of the eruption under such circumstances as a true relapse. Again, after complete convalescence from scarlatina, the eruption of scarlatina and other symptoms may appear for a second time, constituting a true *relapse*.

Before accepting a secondary eruption as a true relapse the possibility of its being a septic rash must be eliminated. These septic eruptions are often spotted in character, but may at times closely resemble the true eruption of scarlet fever.

*Complications.*—*Otitis media* is one of the commonest complications of scarlet fever; it usually develops during the second week, but may occur quite early in the anginose variety. Middle-ear trouble may lead to complete deafness, mastoid disease, purulent meningitis, or cerebral abscess. The glands of the neck may undergo suppuration, producing abscesses. Articular tenderness is common during scarlet fever, and actual arthritis is by no means rare. Whether or not the condition is a true articular rheumatism is not determined; endocarditis may be associated with this condition. Pericarditis and myocarditis may likewise occur. Ludwig's angina, gangrene of the pharynx, pyemia, purpura, etc., are among the rarer complications. No exanthematous disease is so frequently accompanied and followed by nephritis. Transient febrile albuminuria often occurs early. True scarlatinal nephritis usually develops during the third week of the disease. The symptoms come on, as a rule, insidiously; they consist of fever, marked pallor, puffiness of eyelids, edema, and, in severe cases, anasarca. The urine is diminished in quantity, contains albumin, casts, and frequently blood.

*Skin Complications.*—Febrile *herpes* occurs occasionally during the invasive stage of the disease. The patches develop usually about the mouth, although they may be situated upon the cheeks or ears.

*Urticaria* is not an infrequent accompaniment of scarlet fever, although it cannot be considered as bearing any special relation to the disease. It may be seen early or late in the course of the illness, and is usually neither extensive nor protracted.

*Blebs* may occasionally develop upon the skin as a result of a coalescence of neighboring miliary vesicles in intense rashes. Thomas says they may reach the size of hazel-nuts. Bullæ may also occur upon patches which are destined to terminate in gangrene of the skin. Some authors speak of the occurrence of pemphigus, particularly in certain epidemics. These are, in all probability, not true instances of pemphigus, but of bullous dermatitis of septic origin.

I have occasionally seen cases of localized necrosis of the skin in small areas, a condition analogous to the so-called varicella gangrænosa, but better designated *dermatitis gangrænosa*.

*Eczema* may occur as a complication of scarlatina, but is more apt to develop as a sequel. Intense desquamation may leave the skin dry, harsh, fissured, and the seat of eczematous patches; these may persist for some time after convalescence. In other cases a purulent discharge from the ears or nose may give rise to an impetiginous eczema in the region of these orifices; the skin becomes moist and covered with crusts, as the result of the irritating and infective discharges.

*Cutaneous abscesses* may occur upon any portion of the integument. This complication is uncommon, usually occurring in septic cases. I recall an adult patient in whom a large number of small abscesses occurred in the skin.

*Furuncles* may develop during an attack of scarlet fever, although they are more apt to appear after the termination of the disease.

**Bacteriology and Pathology.**—That scarlet fever is caused by a *contagium virum* is a proposition which commands general acquiescence. The identity of the causal parasite is, however, still shrouded in obscurity, despite much laborious research. Space will not permit of mention of the organisms found in the disease. Fiessinger, Dowson, Bergé, Lemoine, and others assert their belief that the streptococcus is the cause of the disease. While there is considerable evidence in favor of this view, the assumption is far from proved. No one has isolated a streptococcus in scarlet fever which can be trenchantly distinguished from other streptococci. Moreover, streptococci are found in normal throats and in the blood and tissues in various diseases, notably in small-pox.

The *blood* in scarlet fever shows a pronounced leukocytosis and an early increase in the eosinophiles.



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tongue, lymphatic glands, spleen, liver, gastro-intestine, bone-marrow, heart, and kidneys exhibit changes after death, but these alterations are not characteristic of, nor peculiar to scarlet fever.

**Diagnosis.**—When scarlet fever exhibits itself in a frank and typical manner, the diagnosis is simple. The presence of the more important symptoms of the disease constitutes a unmistakable syndrome. Aberrant and extremely mild cases may, however, present great difficulties in diagnosis.

There is no one symptom which is pathognomonic of the disease. The rash—the most conspicuous manifestation and one which has given the affection its name—is not in itself sufficient, inasmuch as an almost identical exanthem may occur in other conditions. It is thus seen that a diagnosis must be based upon an association of symptoms, and from a consideration of the disease in all its aspects.

The presence of early whitish furring of the tongue, with projecting papillæ and subsequent exfoliation of the coating, with the persistence of a reddened surface studded with enlarged papillæ, is important contributory evidence of the scarlatinal nature of the disease.

The occurrence of well-marked *desquamation* after an illness suspected of being scarlet fever is of confirmatory value. Too much importance, however, must not be attached to the mere occurrence of peeling, for there are many rashes which desquamate—some, indeed, much more profusely than scarlet fever. It would seem that the amount of scaling in a rash of given intensity is more pronounced after scarlet fever than after most rashes which simulate it. The time of onset of the desquamation, its orderly progression, and its long persistence are of diagnostic import.

Among affections to be differentiated from scarlet fever the most important are those grouped under the designation of *erythema scarlatiniforme*, or *erythema scarlatinoides* (see *Erythema Scarlatinoides*).

The eruption has about the same duration as that of scarlet fever, although it is often briefer. It is followed by a desquamation which is ordinarily branny, but which may take place in large flakes.

*Desquamative scarlatiniform erythema*, termed by some writers *acute exfoliative dermatitis*, differs from the above type in degree rather than in kind. Epidermal casts of the palms

and soles, looking not unlike gloves or slippers, may be exfoliated (see page 152). The nails may be lost and, in severe cases, the hair also. This type of the disease is peculiarly prone to *recurrences*, which may appear every six months or a year. Sometimes marked periodicity is exhibited, the recurring attacks developing with almost calendar precision.



Fig. 226.—Desquamation in rings from palmar sweating; not uncommon. This condition may be confounded with scarlet fever desquamation.

These eruptions are due to toxic or septic states or to the action of drugs or sera. Simple scarlatiniform erythema may occur during the course of various infectious processes, such as rheumatism, septicemia (puerperal or other forms), pyemia, malaria, typhoid fever, etc. An evanescent scarlatiniform rash may appear before the true exanthem of measles, varicella, small-pox, and vaccinia.

All grades of scarlatiniform erythema may develop during the stage of decrustation of small-pox.

## DISEASES OF THE SKIN

ering from severe *burns* may develop scarlatini-  
Some of these prove to be the exanthem of true

h antitoxin and other sera may produce scarla-  
form er ions. Antitoxin rashes developing in the course  
theria may, in some cases, so closely simulate the erup-  
scarle fever as to defy all efforts at satisfactory differ-  
n.

estinal autointoxication may give rise to a scarlatiniform  
tion. Crocker says this may follow the use of enemata,  
h sometimes fac lution and absorption of toxins.  
he drugs which most com only give rise to scarlatiniform  
ruptions are quinin, antipyrin, mercury, belladonna, veronal,  
l salicylic acid. Many other medicaments occasionally  
duce scarlatinoid rashes in susceptible subjects. The erup-  
a resulting from the administration of quinin is the most  
t frequent and the most likely to be confounded with scarlet  
er. If may be followed by well-marked desquamation.

It is often a matter of great difficulty to differentiate scar-  
latiniform erythema from true scarlet fever. In the former,  
e invasive symptoms are often extremely mild; the patient  
commonly does not complain of feeling ill; the temperature  
elevation is slight—perhaps,  $101^{\circ}$  or  $102^{\circ}$  F. The throat may  
be reddened, but the tonsils and uvula are not swollen, and  
exudate is not present upon the tonsils. The reddened, papil-  
lated tongue is, as a rule, absent. The eruption may begin  
upon any portion of the body; it may be patchy and irregular,  
or it may be diffuse, with or without punctation. The glands  
at the angles of the jaws are not apt to exhibit any pronounced  
enlargement; albuminuria is rare, and otitis media does not  
occur.

It is thus seen that scarlatiniform erythema may be readily  
distinguished from a well-pronounced attack of scarlet fever,  
but the fact must not be overlooked that there are many mild  
cases of scarlet fever in which the fever is slight, the eruption  
poorly marked, and the other symptoms correspondingly  
uncharacteristic.

The significant feature in scarlatiniform erythema, particularly  
when the rash is well pronounced, is that the intensity of the erup-  
tion is out of all proportion to the amount of constitutional  
disturbance. There are not present the prostration and high  
fever which would accompany a rash of similar severity in

scarlet fever. Furthermore, there is never seen in scarlatiniform erythema a severe sore throat. Another point of great diagnostic importance is the history as to previous attacks; the tendency to recurrence is a well-recognized feature of scarlatiniform erythema.

*Measles, rubella*, and the prodromal rash of *small-pox* may occasionally be confounded with scarlet fever. The differential diagnosis is considered under these diseases.

Cases of scarlet fever with considerable exudate in the throat are not infrequently diagnosed as *diphtheria*, the physician failing to make an examination of the trunk.

**Prognosis.**—The prognosis is influenced by the character of the prevailing epidemic, the age of the patient, the severity of the attack, and the presence or absence of complications. In mild epidemics the mortality ranges from 4 to 8 per cent. Outbreaks are on record in which deaths reached the appalling figure of 30 per cent. or more.

**Treatment.**—*Prophylaxis.*—Isolation of the patient and his attendants, sterilization of all articles coming from the sick-room, and thorough disinfection of the apartment and all it contains, after the termination of the illness, are necessary to prevent transmission of the disease.

The general treatment is that ordinarily applied to infectious diseases, bearing in mind the special liability to subsequent nephritis. The patient should be confined to bed in a well-ventilated room, kept at an equable temperature. During the early days of scarlatina, when the fever is high, milk constitutes the best and usually the most acceptable diet. When the fever has subsided, patients will request more substantial food, and I have never seen any harm result from permitting the use of a bland, soft diet at this time. When the temperature reaches 103° F., tepid or cool sponge-baths should be given. Hyperpyrexia may demand the use of cold packs.

To lessen the tension of the skin and to allay itching, the inunction of some unguentous substance is desirable. For this purpose cacao-butter is both pleasant and useful; if the itching is pronounced, a 1 per cent. mentholated or a 2 per cent. carbolated ointment may be used.

When the throat symptoms are mild, no special topical applications are necessary. When exudate is present, the throat should be sprayed with hydrogen dioxid, pure or diluted. In purulent rhinitis the nose should be gently irrigated with

warm normal salt solutions. When the glands of the neck are greatly enlarged, the application of an ice-bag is grateful to the patient. Cleanliness of the nasopharynx lessens the liability to otitis media. Earache is most relieved by heat; the external auditory canal may be gently syringed with hot water. Abscess of the middle ear should be evacuated by paracentesis, and this followed by irrigation with a warm boric-acid solution. Nephritis is one of the most common and most serious of the complications of scarlet fever. It is best guarded against by a sufficiently prolonged detention in bed and avoidance of exposure. The urine should be frequently examined. If albumin or casts be found, the patient's diet should be restricted to milk and the patient kept in bed. Uremic symptoms indicate the use of hot packs or hot-air baths; free catharsis should be produced by calomel or salines. Pilocarpin, hypodermically,  $\frac{1}{2}$  to  $\frac{1}{10}$  grain, according to the age, may be given. Convulsions should be combated by chloral, morphin, or chloroform. For the anemia following nephritis iron, in the form of Basham's mixture, will be found to serve a useful purpose.

### MEASLES

*Synonyms.*—Rubeola; Morbilli; Fr., *La rougeole*; Ger., *Masern*; *Flecken*; Ital., *Morbilli*; *Rosalia*; Sp., *Scarampion*.—*Derivation.*—Probably derived from old English *maseles*. Hirsch calls attention to the resemblance to the German *masern* and the Sanskrit *masura*, meaning spots. The term "morbilli" is derived from the Italian *morbillo*, which signifies the *little disease*. This diminutive was doubtless employed to distinguish measles from small-pox, the plague, *il morbo*, probably referring to the latter disease.

**Definition.**—Measles is an acute epidemic, highly contagious disease, characterized by fever, a catarrhal inflammation of the upper respiratory mucous membranes, and a blotchy, macular eruption.

**Etiology.**—Measles may be regarded as the most contagious of the various exanthematous diseases. The inoculability of measles is still a disputed question despite much experimentation. The usual mode of contagion is by direct exposure, and it is not proved that the disease can be transmitted by infected objects or third persons. Susceptibility to measles is practically universal, although there is commonly an immunity exhibited by infants under the age of six months and often during the entire first year of life. The contagious period of

the disease lasts from the beginning of prodromal symptoms to the complete disappearance of the eruption. Second attacks of measles are extremely rare.

The extreme contagiousness of measles is proof of its parasitic origin. Canon and Pielicke, in 1892, found in 14 cases of measles a bacillus which they considered to be the specific causative agent. Czajkowski isolated a bacillus, Lesage, a micrococcus, and Doehle and Weber, protozoa-like bodies. Further research is necessary before the identity of the causal microparasite is established.

**Symptomatology.**—The *incubation period* of measles is usually in the neighborhood of ten or eleven days, the eruption appearing on or about the fourteenth day.

The *prodromal* or *invasive period* is ushered in by catarrhal symptoms. The eyes are reddened, watery, and sensitive to light; there are sneezing and nasal discharge; hoarseness and cough indicate involvement of the larynx in the catarrhal process. The constitutional symptoms consist of fever, headache, anorexia, drowsiness, and irritability. The fever is variable ( $101^{\circ}$  to  $103^{\circ}$  F.), and gradually increases up to the appearance of the eruption. In the average case of measles the invasive stage lasts about four days.

The *enanthem* upon the mucous membrane of the mouth may be seen in advance of the cutaneous exanthem. This eruption, which has been especially studied by Filatow, Canby, and Koplik, consists of small, irregular, bright-red spots, in the center of which there is a minute bluish-white speck. These are particularly well seen in good light upon the inside of the lower lip and the buccal mucous membrane. Koplik has insisted that the spots are pathognomonic of measles.

*Prodromal rashes* of a scarlatiniform, morbilliform, or urticarial type occasionally appear during the prodromal stage of measles. They last but a day or two, and are later followed by the characteristic eruption of the disease. J. D. Rolleston noted a prodromal eruption in 30 cases, almost one-half of the cases observed in a certain series.

**The Eruptive Period.**—The measles exanthem usually appears upon the fourth day of the febrile disorder. The most common initial sites are the side of the neck, the mastoid region of the temples and frontal border of the hair, the cheeks, and the chin—in other words, about the face and neck. The eruption of measles has a special predilection for the face, which is earlier

and more copiously covered than other areas. It is not uncommon for the eruption in this region to become confluent and to give rise to a dusky turgescence of the skin. From the face and neck the rash rapidly extends over the trunk and upper extremities. The lower extremities are the last and least intensely attacked; commonly but a few scattered lesions are seen upon the legs.

*Character of the Eruption.*—The essential lesion of measles is a slightly elevated macule; it is sufficiently elevated to be recognized both by the sense of sight and touch. The more circumscribed the lesion is, the more it is distinctly papular, and the more diffuse and confluent the eruption is, the more



Fig. 227.—Well-marked measles eruption on the fifth day of the disease (Welch and Schamberg)

does it approach an erythematous and unelevated efflorescence. The macules vary greatly in size from a pin-head to a bean or finger-nail. They are irregular in outline, being at times rounded or oval, but at other times angular, indented, and spun out. They are usually sharply margined, and stand out sharply against the pale, integumentary background.

To the fingers passed over the lesions a soft or velvety feel is imparted, quite unlike the indurated feel of the early small-pox eruption. The color of the measles exanthem varies in different patients and at different stages in the same individual. It is seldom as vivid a red as is seen in the exanthem of scarlatina. The macules in the beginning commonly present the

appearance of flea-bites; they are of a dull red color, not infrequently becoming dusky. In some patients the eruption, particularly when it becomes confluent, has a distinct bluish tinge. The bluish coloration is not at all uncommon upon dependent areas, such as the back. In pronounced cases, particularly in adults, the face may exhibit an extremely dusky-red appearance which, with a slight swelling of the skin, produces a strange and disfiguring turgescence.

On the first day of the eruption the lesions are small and discrete, in many cases bearing a resemblance to the eruption of rubella. The macules subsequently enlarge in size and in number, coalesce in areas, and produce a rash which is essentially blotchy. The arrangement of the measles lesions lacks symmetry and uniformity. At times distinct crescents and segments of circles can be distinguished; at other times such



Fig. 228.—Measles in a child (Welch and Schamberg).

configurations are absent. The rash of measles does not invariably consist of slightly elevated, velvety macules. There are at times distinct papules present, and miliary vesicles are not infrequently seen.

Mayr, in his article on "Measles" in Hebra's "Diseases of the Skin" (1866), distinguishes a number of varieties of measles based upon the character of the eruption. The term *morbilli læves* is applied to the common form, in which the eruption is smooth and flat, the individual macules being separated by areas of healthy skin.

In *morbilli papulosi* there appear dark-red or reddish-brown points or papules, the size of a millet- or a hemp-seed, situated at the mouths of the hair-follicles. This form of measles is said to occur in certain epidemics, taking the place of the more usual variety.



I have known the papular form to be confounded with small-pox on more than one occasion.

In *morbilli vesiculosi* or *miliares* small pin-point- to pin-head-sized vesicles are seen upon the summits of the lesions.



Fig. 229.—Measles of the papular type in an adult: mistaken, during a variolous epidemic, for small-pox (Welch and Schamberg).

This gives the skin an appearance resembling prickly heat, and, indeed, the presence of the miliary vesicles has been ascribed to the sweating process. This is probably not the case, as the vesicles are identical with those commonly seen in

scarlet fever, in which disease the sweating process is in abeyance.

*Morbilli confluentes* describes the form in which the macules run together and become confluent. It will be remembered that this was the term applied to scarlatina before the days of Sydenham.

I have seen numerous cases which justify the use of the term confluent measles. I recall a severe epidemic of measles which prevailed in the scarlet-fever wards of the Municipal Hospital of Philadelphia a few winters ago. The eruption in these cases was normal in the beginning, but in a few days became intensely confluent and vivid over the greater part of the cutaneous surface. The mortality among these patients was very high.

*Morbilli hæmorrhagici* is that variety in which the macules are purplish or bluish, and from which the color cannot be made to disappear by the pressure of the fingers. This condition is usually observed in malignant cases.

The lesions here described may be seen to a certain extent in ordinary cases, but the form characterized by papules, by miliary vesicles, or confluence may each be particularly well pronounced in certain epidemics.

At the beginning of the measles eruption the temperature does not register its maximum; it is only after the full development of the exanthem that the pyrexial fastigium is reached. The temperature at this time is commonly  $104^{\circ}$  F., and not infrequently  $105^{\circ}$  F.

When the maximum fever is attained, the eruption is copious and intense; the face is often of a uniform, dusky-red color and edematous, particularly about the eyelids. The entire body is, as a rule, covered, not even the palms and soles being exempt. Not infrequently the rash gives rise to a considerable degree of *itching*.

During the development of the eruption the local as well as the constitutional symptoms increase in intensity. There is an aggravation of the catarrhal symptoms. Children are much prostrated, manifest great thirst, refuse food, and are either extremely restless and peevish, or somnolent. The eruptive stage lasts ordinarily four or five days. With the fading of the rash there is a gradual subsidence of the fever and the catarrhal symptoms. The decline of the fever is by steps, but is, nevertheless, moderately rapid.

As the rash fades the appetite improves, somnolence and

irritability disappear, and the child begins to acquire its normal brightness and desires to leave the bed.

*Stains (Pigmentation).*—As the rash disappears there are left on the skin faint reddish-brown stains which may be detected for a number of days. The stains correspond with the size and shape of the original lesions and are highly characteristic; these are of considerable diagnostic value, and will often enable one to diagnose an attack of measles after it has subsided.

*Hemorrhagic Eruption in Measles of Moderate Severity.*—It is not rare for the eruption in cases of measles of average severity to exhibit hemorrhagic extravasation into the skin. The macules in such cases are of a deeper hue, varying from a claret-red to a reddish-blue tint. It is observed that the spots do not disappear upon pressure of the fingers. The hemorrhage into the skin may be noticed at the height of the eruption, or it may become evident only during the decline, when the redness begins to fade. Claret-colored or bluish discolorations are left, which pass through the color variations observed in an ordinary bruise. The discolorations coincide in size and shape with the original measles spots.

It is important to distinguish this benign form of hemorrhagic eruption from the malignant variety. Holt observed hemorrhagic eruptions in about 5 per cent. of his cases.

**Desquamation** begins as the rash fades, and is first noted upon the initial sites of the eruption, namely, the face and neck. The scaling is branny and furfureous, and is often so fine as to require careful scrutiny to observe it. The skin seldom comes off in large flakes, as it does in scarlet fever. The amount of desquamation varies in different cases, and is usually proportionate to the intensity of the antecedent eruption. In many patients no desquamation will be seen at all. On the trunk the perspiration, which is common in measles, obscures the fine scales or enables them to cling to the body linen. The desquamation is usually most observable on the face. Scaling continues ordinarily from a few days to a week, but rarely is protracted for ten days or two weeks.

**Measles without Eruption (*Morbilli sine exanthemate; Morbilli sine morbillis*).**—As is the case in small-pox and scarlet fever, it is possible for measles to occur without the development of the exanthem. Such cases are, of course, excessively rare, but are recognized by careful and conserva-

tive writers. Cases may occur in which the attack of measles is typical up to the eruptive stage, but at this point the anticipated exanthem fails to appear, and convalescence is established.

**Malignant Hemorrhagic Measles.**—Black measles was, according to the descriptions of the older writers, much more common years ago than at the present day. It is also much rarer than hemorrhagic small-pox, with which it has certain features in common. Hemorrhagic measles is more apt to develop in previously ill and debilitated subjects.

The onset of the disease is usually violent, the fever being high and nervous symptoms prominent. The eruption is bluish or purplish in color, and fails to disappear upon pressure. In other cases the exanthem may appear, recede rapidly, and be followed by hemorrhagic extravasation into the skin in the form of petechiæ or ecchymoses. At the same time bloody discharges occur from the various mucous membranes. There is commonly severe epistaxis, and blood may be observed in the urine, stools, and vomited matter. The patient becomes rapidly exhausted, the pulse is frequent and thready, the skin pale and cold, and death closes the scene.

**Recession of the Rash.**—It occasionally happens that the measles exanthem suddenly and prematurely fades after reaching its maximum, or even before the height of the eruption is attained. The recession of the rash may be temporary, the eruption later reappearing, or it may be permanent. The lay community has a traditional dread of this "striking in" of the eruption, fearing the involvement of one of the internal organs. As a matter of fact, the sudden fading of the exanthem is not the cause, but the result, of such a condition. The phenomenon is usually due to severe pulmonary involvement, leading to cardiac failure and consequent crippling of the circulatory apparatus.

**Complications and Sequelæ.**—The chief complications of measles are referable to the respiratory tract, bronchopneumonia being the most common and most fatal. Membranous laryngitis, lobar pneumonia, and pleurisy are occasionally encountered. Other complications are observed in connection with the alimentary canal, nervous system, lymphatic glands, special senses, heart, and kidneys.

**Cutaneous Complications.**—Accidental erythematous rashes may, in rare cases, precede or follow the true exanthem of measles.

During the invasive period it is not rare for *herpes facialis* to appear, a phenomenon which develops in many infectious processes. *Urticaria* may also occur either in the course of the disease or at a later period. The urticarial eruption is usually moderate and of short duration. Claus reports urticaria occurring in two cases of measles during the period of incubation.

Several authors have called attention to the development of a *bullous eruption* resembling pemphigus. Cases have been reported by Krieg, Loschner, Henoch, Steiner, Du Castel, and recently by Baginsky. Steiner saw 4 cases, all in the same family. The blebs varied in size from a pea to a pigeon's egg, came out in crops, attacked both the skin and mucous membranes, were accompanied by fever, and occurred at any time during the course of the disease, before, during, or after the measles exanthem.

In Henoch's patient the bullæ were so large that a single one covered each cheek; 2 out of these 5 cases terminated fatally. Masarei saw upon the palms and soles during desquamation large blebs which burst and left obstinate and painful ulcers.

*Gangrene* may attack other parts of the skin than the cheeks and genitalia, which are the most common sites of the process. Thomas, of Paris, has reported an extensive gangrene of the buttocks in a child two years of age. Mayr, Faye, Battersey, and Carroll report instances of gangrene attacking various portions of the cutaneous surface.

*Impetigo*, *boils*, and *abscesses* are occasionally observed during convalescence from measles. They represent varying grades of infection with the common pyogenic organisms. *Eczema* occasionally makes its initial appearance after an attack of measles, and may persist for an indefinite period. On the other hand, chronic eczemas have been known to disappear after an attack, as in cases reported by Behrend and others. *Psoriasis* has been observed to appear for the first time after measles. Measles, of course, does not cause the psoriasis, but merely determines the date of its outbreak.

*Disseminated tuberculosis of the skin* may follow in the wake of measles, as in the cases reported by Du Castel, Haushalter, and Adamson.

Roger observed, in the spring of 1900, four cases of *erythema nodosum* after attacks of measles. A girl, aged seventeen

years, eleven days after the termination of an attack of measles of moderate severity, developed fever, and twenty-four hours later a typical erythema nodosum of the legs, and subsequently of the arms, accompanied by painful joints; the condition lasted fifteen days.

*Purpura*.—Hemorrhages developing late in the course of the disease or during convalescence should not be interpreted as evidence of malignant hemorrhagic measles, but as a secondary and superadded condition.

Masarei saw eight patients convalescing from measles attacked with fever, dropsy without albuminuria, and "scurvy, mostly in the form of purpura"; all the cases ended fatally. Gley saw intense purpura hæmorrhagica, together with scorbutic appearances in the mouth, some days after the disappearance of the measles rash.

*Gangrene*.—Although gangrene is not a common complication of measles, it appears to occur more often after this infection than any other, excepting, of course, cutaneous gangrene in small-pox.

The necrosis is apt to take the form variously designated as *cancrum oris*, *gangrenous stomatitis*, or *noma*. This formidable complication commonly develops during the decline of the eruption. It is often associated with, or preceded by, an ulcerative stomatitis. The condition begins upon the mucous surface of the cheek, the exterior being subsequently involved. A bluish-red spot appears upon the skin, which becomes gangrenous and breaks through. A progressive necrosis with a dusky-red zone showing a vesicular ring upon the spreading border takes place. The entire half of the face may become involved in the process. In severe cases most patients succumb.

**Pathology of the Skin.**—At autopsy the eruption of measles is not visible unless there has been hemic extravasation into the skin.

The skin has been studied histologically by Neumann, Catrin, and Unna. Neumann found, as the chief changes, a round-cell infiltration about the blood-vessels, hair-follicles, and sweat-glands. Catrin likewise observed pronounced infiltration of leukocytes, but, in addition, in the nodular form of measles, a series of changes in the deep epithelial cells. These consisted of a colloid degeneration of the perinuclear zone of some of the deep lying epithelial cells. Around the areas of colloid change were dilated interepithelial spaces containing

coagulated fibrin and leukocytes. In the center of the papule the colloid masses run together and undergo coagulation necrosis, this taking place in the prickle-layer.

Catrin found migration of leukocytes from the papillary blood-vessels only at those places where the surface epithelium contained colloid cells. Unna regards the colloid change and necrosis of the epithelium as the result of the direct influence of the poison of the disease upon the epidermal structures.

Unna states that in measles a spastic resistance in the cutaneous vessels is added to the primary congestive hyperemia which develops around the infection in the capillaries, and this explains the cyanotic color, the papular swelling, and the urticarial edema of the center, as well as the frequent escape of coloring-matter in the blood. The rapidly developing and spastic edema always collects at the place of least resistance, which, in children, is in the fatty tissue around the coil-glands and in the sheaths of the larger vessels, the cutaneous muscles, and follicles. The individual coils, the hair-follicles, and the muscles seem to swim free in widely dilated spaces.

Dilated lymph-vessels and enormously distended lymph-spaces are seen in the lower and central parts of the cutis. Another characteristic is the almost complete absence of a cellular exudate. Leukocytic migration is not more than in all simple stagnatory hyperemias—less, indeed, than in most. But a few leukocytes are found in the epithelium. During the stage of scaling, the subbasal horny layer separates from the basal, and with the central and upper horny layers forms the scale. The lost epithelium is replaced as usual by mitotic proliferation. The above description, Unna remarks, refers merely to the ordinary flat or slightly papular eruption.

**Diagnosis.**—The diagnosis of measles can be made before the appearance of the eruption, when the various catarrhal symptoms referred to are associated with Koplik's spots in the mouth. The development of the eruption, which is usually characteristic, renders the diagnosis clear. Rashes almost or quite indistinguishable from that of measles may appear at times in other diseases. Attention, therefore, must be given to the entire syndrome, and the diagnosis not based exclusively upon the cutaneous efflorescence.

The differential diagnosis from conditions that may be confounded with measles is appended.

*Rubella (Rötheln).*—This affection is more apt to be con-

founded with measles than any other. Confusion may arise when measles presents itself in very mild form or when rubella appears, as it sometimes does, with severe manifestations. The history as to the previous occurrence in the patient of the one or the other disease is evidence of considerable importance. It is uncommon for measles to attack an individual twice, and still rarer for rubella to act in this manner.

The prodromal stage in rubella is very brief, rarely lasting more than twenty-four hours; the catarrhal symptoms are slight or absent. It will be helpful to remember that catarrhal manifestations are more pronounced in mild cases of measles than in severe cases of rubella. The fever is slight—commonly  $99^{\circ}$  or  $100^{\circ}$  F., and rarely exceeding  $101^{\circ}$  F.; it is of short duration. The eruption in rubella spreads more rapidly than measles, and is of briefer duration. The lesions are slightly elevated macules, of a pale rose-red color, and pin-head- to pea-sized. The eruptive elements are smaller, paler, and more discrete than in measles. The patient with rubella often feels well enough to remain out of bed.

*Scarlet Fever.*—It is only in anomalous cases that scarlatina is apt to be confounded with measles; ordinarily the differentiation of the affection is a simple matter.

In scarlatina the onset is more stormy, with high fever and a much greater tendency to vomiting. The eruption usually comes out on the second day, earlier, therefore, than that of measles. Photophobia, coryza, hoarseness, and cough are lacking in scarlatina, but instead we find sore throat, marked glandular enlargement about the jaws, and a characteristic tongue. The peculiar buccal spots of measles are absent, the oral and pharyngeal mucous membrane showing merely congestion. The face is less intensely involved by the rash than in measles, and, moreover, shows circumoral pallor.

The rash of scarlet fever is diffused and punctiform; it should be remembered, however, that on the arms and legs it is not infrequently blotchy and suggestive of measles. The subsequent desquamation is more profuse and lamellar in character. Otitis media and albuminuria are common complications. In septic cases purulent nasal discharge is not uncommon, even in the early stages of the disease; laryngeal symptoms are, however, rare.

Confusion may result in those cases of measles in which there is a tendency to general confluence of the rash; usually some



portions of the cutaneous surface will exhibit the measly character of the rash. In patients seen late brownish stains on the body speak for measles, and pronounced desquamation of the hands and feet and albuminuria point toward an antecedent scarlet fever.

*Influenza*.—"La grippe," particularly that form accompanied by catarrhal inflammation of the upper air-passages, may present a considerable resemblance to measles during the invasive stage. It is manifest that a disease beginning with fever, coryza, and cough might readily be either measles or influenza. Photophobia, which is justly regarded as a significant symptom by the laity, is usually well marked in measles and absent in influenza. If the characteristic bluish-red spots with whitish specks on their summits be visible upon the buccal mucous membrane, the diagnosis is at once made clear. Influenza is occasionally accompanied by an eruption.

*Small-pox*.—The differential diagnosis between small-pox and measles is referred to under the former disease.

*Typhus Fever*.—During epidemics of typhus a confounding of this disease with measles might take place when the eruption is profuse. Pastau is quoted by Thomas as saying that the exanthem of typhus is by no means rarely papular, or even hemorrhagic, like that of measles, and a catarrhal affection of the air-passages, especially of the trachea, is usually one of the concomitant symptoms. The fever and nervous symptoms are more pronounced in typhus, and there is great enlargement of the spleen; the eruption is usually absent on the face, and ocular and nasal catarrh is lacking.

*Roseola Syphilitica*.—The macular eruption of syphilis has on more than one occasion been confounded with measles. The error of mistaking syphilis for measles may be made when the patient is an adult and when the febrile symptoms are mild. On the other hand, syphilis with pyrexial elevation might be regarded as measles.

The eruption of syphilis is slower in development and the lesions are much more uniform in size and distribution. The face is but slightly, if at all, involved. Usually the initial lesion or the hardened remains thereof can still be discovered. In addition, other evidence of syphilitic disease may be present, such as mucous patches, pronounced inguinal adenopathy, etc.

*Morbilliform Erythema*.—There are a number of conditions in which rashes bearing a more or less close resemblance to that

of measles may occur. They may be divided into—(a) accidental rashes accompanying the exanthematous fevers; (b) drug eruptions; (c) serum eruptions.

Mention has already been made of the resemblance of the roseola variolosa to measles. An analogous eruption, *roseola vaccinosa*, develops occasionally about the tenth day of vaccination. Morbilliform rashes may in rare instances be observed also in the course of varicella, scarlet fever, and other infectious diseases.

*Drug Eruptions.*—The drugs which most frequently give rise to eruptions simulating measles are antipyrin, quinin, chloral, copaiba, cubebs, and veronal.

The most common eruption resulting from the administration of antipyrin is a morbilliform erythema. Of 52 instances of eruption from the use of antipyrin collected by Spitz, 41 were of the measles type. The eruption may be generally distributed over the trunk and extremities, or it may be limited to certain regions thereof; an important distinguishing feature is that the face is usually exempt. Crocker states that these eruptions may be accompanied by oronasal catarrh. The difficulty in diagnosis may be increased by the appearance of the antipyrin eruption following catarrhal symptoms, such, for instance, as are encountered in influenza, for which the drug is administered. The conjunctivitis, photophobia, hoarseness, cough, and buccal eruption are all absent. Fever, when present, is slight and not characteristic of measles. Furthermore, the normal progression of the measles exanthem from the face and neck gradually downward will be found lacking. The eruption, moreover, is apt to be non-elevated and exhibit irregularities as to distribution. If a large dose of antipyrin has been taken, it can be found in the urine by testing the same with the perchlorid of iron.

*Quinin.*—Quinin gives rise not infrequently to erythematous eruptions. Of 60 quinin eruptions analyzed by Morrow, 38 were of the erythematous type. Most of these are of the scarlatiniform type, but some resemble measles. The rash may develop after the administration of as small a quantity as one grain, or even a fraction of a grain, of the drug. The idiosyncrasy appears to be most frequently observed in women. Catarrhal symptoms are absent.

The eruptions from the administration of *chloral* are less common than those after antipyrin or quinin. Gee saw 2 cases

in which there was a dusky-red, papular eruption surrounded by a more diffuse redness of the face and neck, and patchy or mottled-red spots on the extremities, especially about the articulations. The absence of the catarrhal and constitutional manifestations of measles would enable one to exclude this infection.

*Copaiba and Cubebs.*—Copaiba and cubebs may give rise to scarlatiniform or morbilliform rashes; the latter often strongly suggest measles. Copaiba usually produces an eruption consisting of rose-red colored, slightly raised patches, which may be discrete or blotchy, and generalized or limited. (See Fig. 73.) Above the elbows and knees there is a tendency toward confluence of the patches. Itching is apt to be a distressing symptom. The eruption may develop rapidly after the administration of the drugs or only after some days have elapsed. Most of the eruptions have occurred in persons who were receiving treatment for urethritis. A peculiar and disagreeable balsamic odor is often imparted to the skin when copaiba is taken.

All the drug eruptions are apt to exhibit irregularities in the manner, rapidity, distribution, or duration of the eruption, which will arouse suspicion as to its nature; furthermore, the prodromal stage of measles, with its characteristic catarrhal symptoms, is wanting.

*Antitoxic Sera.*—Antitoxic sera occasionally call forth eruptions which are measles-like in character. Diphtheria antitoxin may now and then give rise to a morbilliform erythema, although much more commonly the eruption comes under the head of urticaria or exudative erythema. Antitoxin rashes may develop at any time from three days to three weeks after its administration; most rashes, however, appear from eight to fourteen days thereafter. There may be elevation of temperature, with joint pains and occasionally joint swellings, accompanying the eruption. The temperature may rise suddenly to 102° F. or thereabouts, but it soon falls. Catarrhal symptoms are invariably absent.

The antistreptococcus serum and antitetanic serum may, on rare occasions, also give rise to morbilliform eruptions.

**Prognosis.**—The prognosis of measles in vigorous and well-nourished children beyond the age of two or three years is extremely favorable. In the very young and debilitated fatalities through pulmonary complications are not rare.

**Treatment.**—Measles, like other self-limited diseases, runs

Confinement to bed, guarding against exposure, and proper diet are the most important measures. To be sure, for the safety of others, adequate isolation of the patient should be carried out.

**Synonyms.**—German measles; R $\ddot{o}$ theln. There is an embarrassment of riches in the various designations applied to this disease. The Germans use the terms *R $\ddot{o}$ theln* and *rubeola*; the French call it *rubeole*. The latter term being used at times to denote true measles, it is confusing to apply it to another disease. Among other appellations are: *Rubeola sine catarrho seu inocata*, *rubeola notha*, *rubeola epidemica*, *rubeola morbillosa*, *rubeola scarlatinosa*, *rosania*, *roseola epidemica*, *rosalia*, *exantheme jugace*, *essera Vogelii*; *hybrid*, *bastard*, *spurios*, or *imperfect measles*; *hybrid* or *bastard scarlatina*; *rougeole fausse*; *Fewer-masern*; *German measles*; *French measles*, etc.

**Etiology.**—Rubella, like other exanthematous diseases, is derived from and begets a like disorder. Although the parasitic cause of the disease has not been discovered, there can be little doubt that it is produced by the reception into the body of an animal or vegetable microorganism. The disease prevails largely in epidemic form, and is almost as common as measles, with which it has doubtless often been confused. The infection of rubella appears to be more tenacious and persistent than that of measles, and is more often carried by infected articles. The disease is contagious at a very early date in its course. It is chiefly an affection of children, but adults are not infrequently attacked. One attack protects for life, no authentic report of a true second attack being on record.

**Symptoms.**—The *period of incubation* is more variable than that of measles. It may vary between five and twenty-one days, but is "in the neighborhood of two weeks. The

period of invasion is often devoid of symptoms, although mild prodromes, such as malaise, headache, nausea or vomiting, and catarrhal symptoms, affecting the eyes, nose, throat, and bronchial tubes, may be present. This stage is usually brief, lasting about twelve hours, but it may vary between a few hours and five days.

*General Symptoms During the Eruptive Stage.*—Fever is, as a rule, proportionate to the extent and the severity of the eruptive and catarrhal symptoms. In some epidemics the fever is extremely slight, and in some instances absent. In other epidemics, in severe cases, the temperature may register 103° or 104° F. or higher. It is common for the temperature to range between 99° and 101° F. The *catarrhal* symptoms affect the eyes, nose, throat, and bronchial tubes. The eyes are usually “watery” and slightly injected. Sneezing is apt to be present, and in some cases distinct coryza. Cough is usually slight, but varies in different epidemics. Sore throat of a mild character is an extremely common symptom. It is seldom as severe as that seen in scarlet fever, the redness often being limited to the anterior pillars. Koplik spots are absent, but I have seen pin-head-sized, deep-reddish spots upon the buccal mucous membrane. Hoarseness, usually mild, but occasionally pronounced, has been noted by a number of writers. The tongue is commonly coated with a thin, grayish coating, with, at times, slight enlargement of the papillæ upon the tip. The “strawberry tongue” of scarlet fever is absent.

Enlargement of the lymphatic glands has long been regarded as a symptom of considerable diagnostic import. A general glandular intumescence is present, but this is also true of scarlet fever and, to a lesser extent, of measles. Nausea and vomiting are rare symptoms except in severe cases. Itching varies in intensity, but is usually mild or absent.

*Period of Eruption.*—A half-day or so after the onset of mild invasive symptoms, or in many cases without any prodromes at all, the eruption of rubella makes its appearance. The rash is commonly the first symptom to attract attention, the other mild initiatory disturbances then being recalled. Not infrequently a child awakens in the morning with the eruption visible upon the face. Patterson and Copland assert that it comes out simultaneously on different parts of the body. The eruption, as a rule, appears first on the face. In noting the eruption a short time after its appearance upon the

face, however, I have seldom failed to find it to some extent on the trunk and arms.

The exanthem spreads quite rapidly over the body in the course of twenty-four to forty-eight hours. It is interesting to note, however, that the maximum intensity of the rash is not simultaneously observed on the entire cutaneous surface. It is not unusual for the face, chest, and arms to show the eruption at its height, while the legs are yet unaffected. When the lower extremities exhibit the exanthem in its greatest intensity, it is fading upon the face and upper part of the body. In other words, the rash often seems to pass over the cutaneous surface in a sort of *wave-like progression*. The duration of the eruption at its height in any given region is from a few hours to a half-day. The more severe the attack, the longer is the period of maximum intensity and the longer the duration of the eruption.

*Character of the Eruption.*—The eruption, in its most typical form, consists of pin-head- to lentil-seed-sized, pale rose-tinted, slightly elevated, moderately defined macules. The lesions are usually rounded or oval, but may be irregular. The elevation is scarcely sufficient to warrant the use of the term papule, but is appreciable to the finger passed over the surface of the skin. The macules are ordinarily discrete, with considerable intervening skin, particularly at the onset of the eruption and on the trunk. Later, they are apt to become more closely set and may coalesce, with the production of irregular patches resembling measles or sheets of eruption of a scarlatiniform character.

Ordinarily macular grouping, such as is seen in measles, is absent, but I have now and then seen distinct linear and crescentic configuration, indistinguishable from that observed in measles. Rubella in its purest form, however, shows smaller, more regular, and more discrete lesions than those of measles, which are inclined to present an irregular, blotchy appearance. The *color* of the macules of rubella has been described as a pale rose tint or rosy-red by most writers. The color doubtless varies to some extent in different individuals, as does the tint in all eruptive diseases, but it may be said, in general, that it is ordinarily not so vivid as the eruption of scarlet fever, nor so dusky or bluish as the measles exanthem.

The discreteness of the slight- gives the eruption its distinctive ap ing

out in striking contrast with the pale integument. Confluence is, however, frequently noted in certain areas, particularly on



Fig. 230.—Rubella—characteristic eruption upon trunk (Welch and Schamberg).

the face. On the second or third day of the eruption it is not uncommon for the rash to become paler in tint and to assume a more diffuse appearance.

Pressure or irritation of the skin seems to increase the intensity of the eruption and to encourage confluence.

*Distribution of the Eruption.*—The face almost invariably exhibits an abundance of eruption, especially upon the forehead, cheeks, and chin. The lesions may be so copious as to produce the appearance of slight edema. The eruption does not respect the circumoral region, as does the exanthem of scarlet fever. The scalp is profusely covered, as is also the neck. The chest, abdomen, back, and arms show rather less eruption; the buttocks and posterior aspect of the thighs, owing, perhaps, to pressure, commonly exhibit the eruption in such profusion as to present confluent patches. The legs, as a rule, are the seat of the least eruption, the lesions often being widely scattered. It has been asserted by some writers that the palmar and plantar surfaces are exempt, but this is not true, as lesions are not infrequently found in these regions in well-pronounced attacks. The above outline presents the distribution of the eruption in normal cases; it is not rare for departures from this to take place.

Barthez and Rilliet have noted the fading of the eruption, followed by the reappearance of the same upon the same day or later. Griffith also mentions a case in which it was invisible during one day and returned.

*Duration of the Rash.*—The eruption ordinarily persists from one to five days: the average duration is two or three days. In mild cases it is shorter and in severe cases longer.

*Anomalous Features of the Eruption.*—In rare instances miliary vesicles have been noted upon the reddish macules. This has been observed by Curtman, Cuomo, Thomas, Hardaway, and Copland.

Petechial spots have been recorded by Dunlop, and likewise by Cheadle; Erskine reports similar lesions of the uvula and soft palate. A purpuric rash was also observed by Glaister.

Claussen makes mention of lesions which gave the impression of small shot being buried in the skin. Griffith saw an unusual eruption which also imparted a shotty feel to the finger.

**Scarlatiniform Variety of Rubella.**—Thus far reference has been made only to normal rubella, and to the form which bears more or less resemblance to measles. There are other cases in which the exanthem bears a strong resemblance to that of scarlet fever. Some writers of make no mention of this variety, and ex tion of



similarity between the rashes of rubella and scarlatina. Thomas says: "According to my observations, the exanthem of rubeola (rubella) possesses a similarity to that of measles only, not the slightest to that of a normal scarlet fever." Cristowe and Bourneville and Bricon entertain similar views. These opinions may be attributed to the fact that the scarlatiniform variety



Fig. 231.—Rubella—scarlatiniform type. Patient presented himself at a dispensary for treatment (Welch and Schamberg).

of rubella has not come within the range of the personal experience of these physicians.

Mention could be made of a large number of writers who have observed this variety. Hatfield speaks of an epidemic in which the rash in many cases was indistinguishable from measles, and in other cases strongly resembled scarlet fever. J. L. Smith refers to a case which, had he been guided alone

by the eruption, he would have regarded it as a mild scarlet fever. Griffith describes a case in which the eruption was at first macular, yet on the second day it so closely resembled scarlet fever that he was unable for several days to make a diagnosis. The whole body was covered by a general scarlatinal blush, and nowhere could a single macule or papule be found. A short time afterward the brother took rubella.

I have seen one or two cases of rubella with scarlatiniform eruptions in children convalescent from scarlet fever.

Griffith, from a careful study of a large number of cases, comes to the conclusion that there are two easily recognized



Fig. 232.—Rubella—morbilliform type (Welch and Schamberg).

types of variation from the character of the eruption in a normal case:

"An eruption in which the spots are, for the most part, nearly or fully the size of a split-pea, more or less grouped, and, in fact, having the greatest resemblance to measles.

"A rash which is confluent in patches or universally, not elevated, and which produces a uniform redness closely simulating that of scarlatina. Very careful examination will often reveal a few papules amid the general diffuse redness."

*Desquamation.*—Upon the subsidence of the eruption a delicate brownish or yellowish staining may be noticed for a short time.

A slight branny or furfuraceous desquamation occasionally follows the disappearance of the rash. The development of this scaling is proportionate to the severity of the attack and the intensity of the rash.

## DISEASES OF THE SKIN

ations and sequelæ of rubella are comparatively important. Pneumonia, stomatitis, erysipelas, impetigo, urticaria, otitis, endocarditis, albuminuria, etc., have been encountered in rare instances.

The diagnosis of an atypical case of rubella, when occurring sporadically, may be attended with difficulty. In its classic form, and especially in its high prevalence, the diagnosis is a very simple matter. There is no one symptom which in itself is characteristic; the diagnosis must be made from a consideration of the composite symptoms and pathology.

*Measles* is the disease most apt to be confounded with rubella. The differentiation is given in the chapter on Measles. *Scarlet Fever*.—It is quite possible to confound one form of the eruption of rubella with that of scarlatina. Many writers have acknowledged their inability to distinguish at times between the confluent scarlatiniform type of rubella and the scarlet fever exanthem. In these cases other symptoms than the skin appearance must be relied upon for the differential diagnosis.

The incubation period of scarlet fever is distinctly shorter than that of rubella, lasting ordinarily from three to seven days. The invasive symptoms are sudden and quite severe; vomiting occurs in the majority of cases, followed by rapid rise of temperature—usually to 103° or 104° F. There is marked sore throat, the tonsils, soft palate, and uvula being particularly affected. The glands generally are enlarged, but more especially about the angles of the jaw. The tongue is at first coated, later exhibiting the characteristic red, papillated appearance.

The eruption appears first on the neck and upper chest; the face usually shows the circumoral pallor. The eruption lasts ordinarily five or six days. Desquamation occurs in flakes and is most marked on the hands and feet. Middle-ear disease and albuminuria are extremely common complications.

*Influenza*.—Forchheimer states that in the epidemic of influenza in 1892 many cases were observed in which the differential diagnosis between scarlatina, rubella, and influenza presented difficulties, at least in the beginning.

There may be present in influenza an erythematous eruption which may be localized, or which may rapidly spread over the body. The fever, prostration, severe gastro-intestinal or

respiratory symptoms and the known prevalence of the disease will serve to distinguish it from rubella.

**Prognosis.**—The prognosis is absolutely favorable in the vast majority of cases. Deaths have been so uncommon as to attract attention by their rarity; they have invariably been due to complications, usually affecting the respiratory tract.

**Treatment.**—The only treatment that is necessary in the majority of cases is the guarding of the patient against undue exposure. When fever is absent and catarrhal symptoms are slight, one need not insist on rest in bed, although the child should be kept in a properly heated and ventilated room. The diet should be regulated according to individual requirements. No special medication is required unless the attack be severe or some complications develop.

## INFECTIOUS DISEASES ACCOMPANIED AT TIMES BY ERUPTIONS

This chapter is devoted to a consideration of the cutaneous manifestations of those infectious disorders which are frequently, although not uniformly, accompanied by an exanthem. Thus fever might, owing to the constancy of its eruption, be included among the exanthemata, but it has been thought best to consider it with typhoid fever.

In addition to the ordinary cutaneous expressions of these diseases, an effort has been made to describe the more unusual and accidental eruptions which are from time to time encountered. These include various toxic erythemas—scarlatiniform, morbilliform, urticarial, etc. It is interesting and important to note that a variety of toxins developed in different infectious processes may evoke the appearance of rashes closely simulating those of the common exanthemata.

### TYPHOID FEVER

The characteristic eruption of typhoid fever makes its appearance toward the end of the first week or early in the second week of the disease. Most commonly it is observed upon the seventh or eighth day. In children the spots have been known to appear as early as the second or fourth day; on the other hand, Murchison has seen them develop thrice on the fourteenth day and in one case on the twentieth day.

The eruption appears in the form of discrete, rounded, more or less circumscribed, rose-colored spots, which are always slightly elevated above the level of the skin. They vary in size from a pin-head to a lentil-seed, but may increase somewhat in diameter. They are at first pale red, the color disappearing upon pressure; later the tint becomes darker. The roseolæ are rarely petechial save in the uncommon cases of hemorrhagic typhoid fever.

The spots appear in crops, usually at intervals of three or four days. According to Curschmann, they persist from three to five days—in rare cases, seven to ten days—and then fade. New spots appear while the old ones are disappearing. The entire eruption lasts from ten days to two weeks.

The roseolous eruption is most commonly observed upon the abdomen, thorax, and back; on the back, the spots are sometimes seen before they appear elsewhere. The roseolæ are usually confined to the trunk, but in profuse eruptions they may extend to the extremities; they become sparser as the distance from the trunk increases. In rare cases the neck and border of the lower jaw may exhibit some eruptive elements.

The number of spots is ordinarily small, varying from five to twenty-five or thereabouts. Exceptionally, an enormous profusion of spots may exist. Murchison counted at one time 1000 lesions upon a patient. The rose-spots are said to be fewer, as a rule, in children than in adults.

In some cases of typhoid fever the eruption is absent throughout the entire course of the disease. Curschmann remarks that in the Leipzig clinic persistent absence of spots was noted in 260 out of 1261 cases. Pepper has stated that the extent of the eruption varies in different epidemics and in different seasons.

Although some writers believe that a copious eruption is of favorable prognostic significance, others deny any relationship between the severity of the disease and the extent of the roseolous outbreak.

Occasionally, especially in children, the rose-spots are surmounted by a minute vesicle which undergoes desiccation. These minute vesicles develop at times upon the eruption of scarlet fever, measles, etc., and invariably lead to some desquamation. When a relapse occurs, the typhoid spots commonly reappear in equal and often in greater numbers than during the primary outbreak.

Typical rose-spots are believed to occur only in typhoid fever, to which disease they are peculiar. Liebermeister saw an extensive eruption which suggested in appearance a macular syphiloderm. During an epidemic of small-pox I was asked to see a patient with an unusually profuse typhoid eruption, the possibility of its being variola having been under consideration.

**Erythematous Rashes in Typhoid Fever.**—Many writers, including Murchison, Liebermeister, Hammond, Le Maigre, Strümpell, Osler, Netter, and others, have

called attention to the occasional occurrence of erythematous rashes in the course of typhoid fever. Curschmann regards most of these outbreaks as drug rashes: while medicaments may have caused some of the rashes reported, it is not likely that the majority have had such a causal factor, as they have developed under all sorts of treatment. Osler remarks that he has encountered rashes more frequently since he has given up the use of quinin in typhoid fever.

These efflorescences appear to occur much more frequently in some epidemics than in others. During the past few years in Philadelphia they have not been particularly rare. Dr. D. J. M. Miller observed 10 instances of erythema within four months among 250 cases (175 adult women and 75 children). Among 350 attacks of typhoid fever in males, however, but 2 cases of erythema were encountered. In the Johns Hopkins series of 829 cases of typhoid fever there were 15 erythematous rashes.

The rashes may be of several varieties. There may be a *simple erythema*, consisting of a diffuse reddish blush without punctation. The eruption is usually of brief duration, lasting twenty-four hours or thereabouts. It is most often seen upon the abdomen, chest, or back, and may extend over the entire trunk or be partial. This character of eruption is usually observed early in the course of the disease—at the outset or during the first week.

Some of the rashes are distinct *scarlatinoid erythemas*, at times followed by desquamation, either branny or in flakes. There is a pronounced punctated scarlatiniform eruption involving the trunk, and occasionally the extremities. The eruption persists from two to ten days or longer. This type of rash is more prone to develop after the second week of the disease, but may occur earlier. Scarlet fever is often suspected and sometimes diagnosed, but well-pronounced angina and "strawberry tongue" are not present. Furthermore, this rash often occurs in persons who have previously had scarlet fever.

*Morbilliform* rashes bearing a close resemblance to the eruption of measles occasionally occur during typhoid fever, but are distinctly rarer than the types previously described. Such rashes have been reported by Beevor, Neumann, and DaCosta.

These rashes are in all probability the result of the absorption of intestinal toxins. At times it would appear that enemata favor the solution and absorption of toxins. It is possible that some of the rashes are due to the administration of drugs.

The above-described cutaneous efflorescences have no prognostic significance, and are chiefly important from a diagnostic viewpoint.

**Urticaria.**—Urticaria is of comparatively rare occurrence in typhoid fever; like the other accidental eruptions, it varies much in frequency in different epidemics. Among 600 cases of typhoid fever studied by D. J. M. Miller, urticaria occurred only in 3 cases. In the Johns Hopkins series, it was observed 3 times among 829 cases. On the other hand, Curschmann noted urticaria in 6.3 per cent. of his cases in Leipzig, and Phillips found it in 21 patients among 1230 cases of typhoid fever.

**Herpes.**—It has been long noted that herpes occurs with great infrequency in typhoid fever; indeed, to such an extent is this true that some writers erroneously allege that it does not occur at all. Osler's figures on the subject enable us to judge of the infrequency of its development. Among 1500 cases of typhoid fever herpetic outbreaks were found in 20 patients, or a little more than 1 per cent. of the cases. In the Johns Hopkins series of 829 cases herpes was observed in 29 patients, or 3.5 per cent. D. J. M. Miller observed 4 cases of herpes among 250 cases of typhoid fever examined. Among Phillips' 1230 cases, herpes was present in 12 patients. Zinn seems to have recorded the largest incidence of herpes in typhoid fever, having encountered it in 5 per cent. of 190 cases. Many of the older writers maintained that even when all the characteristic symptoms of typhoid fever were present, a case must not be regarded as this disease if herpes labialis developed. Some modern writers refer to herpes as negatively pathognomonic of typhoid fever.

**Purpura** or hemorrhage into the skin may occur in typhoid fever, as it does in other infectious diseases. Among Phillips' 1230 cases, purpura was noted 6 times. It usually occurred upon the lower extremities late in the disease. In one patient the purpura occurred about the end of the second week, and was accompanied by intestinal hemorrhage. The termination was fatal.

**Desquamation after Typhoid Fever.**—Louis, Murchison, Dreschfeld, Hutchinson, Strümpell, Osler, Chantemesse, Weill, Hutinel, Comby, Hare, Riesman, and other writers have described desquamation occasionally occurring after typhoid fever. Weill observed desquamation 33 times in 37 cases in children, and Phillips, extensive desquamation in 83 of 1230



## DISEASES OF THE SKIN

seen chiefly upon the trunk, but also upon the face, and, rarely, upon the face. The scaling is lamellar in character, but may in some cases occur in the form of small scales. The scaling is most frequently observed during the stage of convalescence. The scaling has been attributed to various causes. Some authors distinguish three varieties: (1) Desquamation of the summits of rose-spots, due to desiccation of the scales; (2) that appearing as a sequel of sudamina; (3) extensive furfuraceous or lamellar desquamation, representing a type of the shedding of hair. Another variety may be distinguished resulting from an antecedent erythematous rash.

**Lamina, or miliaria crystallina**, occurs commonly in the course of typhoid fever. This eruption is seen in many diseases in which sweating occurs, but appears to be usually frequent in this affection. The eruption is seen chiefly upon the abdomen and thorax, and comes on during the decline of the fever. Curschmann encountered sudamina in 98 out of 150 consecutive cases of typhoid fever. The sudaminous eruption is often followed by desquamation.

**Miliaria rubra**, or prickly heat, occurs at times in typhoid fever in such intense form as to lead to the suspicion of an intercurrent eruptive fever. On one occasion I saw a patient whose body was so thickly beset with small conic, red papules as to cause the case to be regarded as scarlet fever. Another patient, during the latter part of the second week of the disease, exhibited small and large, closely aggregated vesicles on the entire trunk, and small conic, vesicopustules scattered over the face and arms. This patient was refused admission to a hospital for fear of his suffering from a contagious disease.

**Gangrenous dermatitis** is a rare complication of typhoid fever. Many writers of large experience do not mention its occurrence. In 1898 B. F. Stahl published a report of 10 cases of gangrene of the skin occurring among 144 cases of typhoid fever in soldiers returning from the Spanish-American War. The author had an opportunity of seeing a number of these cases. The gangrene occurred in large and small patches scattered over the surface of the body. Bullæ and erythematous spots preceded the development of necrosis. Some of the patients suffered also from furuncles and abscesses. Three of the 10 patients died. This condition is not to be confounded with *bed-sores*, which are not uncommon in typhoid fever.

There is another variety of *disseminated gangrene of the skin* in which the lesions begin as papules or nodules and rapidly progress to vesicles, pustules, and necrosis, leaving deep, punched-out ulcers. Such a type is illustrated in the accompanying photograph. Cases of this character are suggestive of multiple cutaneous thrombosis due to the typhoid bacillus.

**Furunculosis** was observed by Phillips in 45 patients in his series of 1230 cases. Edsall has described a series of cases in which furuncles developed about the buttocks.

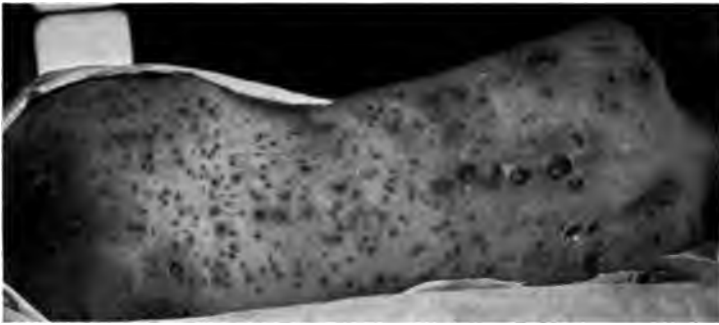


Fig. 233.—Dermatitis gangrenosa occurring during the third week of typhoid fever. Lesions begin as papules, develop into vesicles and pustules, and terminate in deep necroses. Fatal termination. Seen and photographed by the author (patient of Dr. J. Henrie Lloyd).

**Striæ atrophicæ**, occurring during and after typhoid fever, have been described by Wilks, Bradshaw, Shepherd, Troisier, Northrup, Fisher, Sir Dyce Duckworth, Köbner, Phillips, and others. The atrophic streaks usually appear over or above the patellæ, although other regions may be affected. The striæ are at first pinkish, but ultimately become white. They are believed to be due to overstretching of the skin, due to growth of the long bones during protracted illness.

## TYPHUS FEVER

The eruption of typhus fever is so uniformly present and so characteristic of the disease as to warrant the inclusion of typhus in the list of **exanthematous affections**. The rash may, in rare cases, be absent, and in of escape observation. It has b is seen in 95 per cent. of all

spicuous and diagnostic symptoms of the disease, a fact which has led to the use of such designations as "spotted fever," "petechial fever," etc.

The exanthem usually makes its appearance upon the fourth or fifth day of the disease, but may occur as early as the second and as late as the eleventh day. Salamon, working with Curschmann, observed the rash in 39 cases of typhus; of this number, it appeared 11 times on the fourth day, 13 times on the fifth day, and 5 times on the seventh day.

The spots appear first upon the abdomen, chest, shoulders, and back; very soon they make their appearance upon the arms and legs, even as far as the hands and feet. The face is usually



Fig. 234. Petechial eruption of typhus fever: patient recovered (Welch and Schamberg).

entirely free of eruption, although in children at times the rash may be sufficiently pronounced to cause confusion with measles.

The lesions are not very abundant upon the first day, but constantly increase in number for about forty-eight hours, when the full complement of spots is present.

The rash is made up of two elements—a background consisting of a poorly defined, violaceous reticulation—the so-called "subcuticular mottling"—and the rose-spots or maculæ. The macules are pin-head- to lentil-seed-sized, pale red or rosy red at the onset with ill-defined borders, and scarcely elevated

above the surface of the skin. In some cases the mottling may be present without the spots, but the converse of this is seldom the case. In the beginning the macules disappear completely upon pressure, but gradually the color becomes more dusky or actually purplish, and the discoloration can no longer be made to fade under tension or pressure. The bluish or purplish coloration is evidence of hemorrhagic extravasation into the skin. At times, late in the course of the disease, petechiæ may develop upon healthy areas of the skin without the previous presence of macules.

Only a certain proportion of rose-spots become the seats of hemic extravasation. In general, it may be stated that the greater the extent of hemorrhage into the skin, the more severe is the attack. Petechial spots are most commonly seen about the flexures of joints, particularly the groin, and on dependent portions of the cutaneous surface, such as the back.

The duration of the eruption varies according to the amount of dermic hemorrhage. Simple rose-spots may disappear in a day or two; those showing moderate extravasation fade in five or six days, while deep purplish petechiæ may persist for two or three weeks.

During the process of fading the spots pass through the color gradations of blood-pigment, showing themselves as greenish, yellowish, or brownish stains. The disappearance of the eruption is commonly followed by a branny or furfuraceous scaling.

During the evolution of the eruption the typhus exanthem, particularly when it is profuse with a tendency to coalescence, may closely simulate measles.

The individual lesions of the typhus eruption in the beginning bear a strong resemblance to those of typhoid fever. They are, however, less papular, more abundant, and later petechial in character. The macules are, at times, more abundant upon the extremities than upon the trunk, a circumstance that is never observed in typhoid fever—indeed, in the latter disease spots upon the arms and legs are quite unusual.

In exceptional cases the rash of typhus may be absent, constituting the so-called *typhus sine exanthemate*. Murchison failed to discover a rash only 55 times in 2499 cases.

## INFLUENZA

While rashes are occasionally encountered in the course of influenza, there is no characteristic eruption belonging to the symptomatology of the disease.

The disease exhibits pronounced functional vasomotor changes, in which the cutaneous blood-vessels are often involved. Leichtenstern regards redness of the skin associated with hyperidrosis, more especially of the face, as an important symptom of influenza. Finkler states that it is common to find the skin of the face reddened and swollen, probably as a result of a vasoparalysis. Sometimes the redness extends beyond this region and involves various portions of the body.

A **morbilliform** or **scarlatiniform erythema** is occasionally observed upon the face, trunk, or extremities; the legs are less frequently attacked than the upper extremities. The presence of a mottled eruption upon the face, together with catarrhal symptoms, may excite a suspicion of measles. Teissier has described a series of cases in which measles and scarlet fever were distinguished with difficulty.

Leichtenstern observed a "finely punctate eruption" in 9 per cent. of his cases; on the face alone, in 6 per cent. Bristowe found erythematous rashes present in 6 per cent. of his cases; a papular or scarlatiniform rash in 20 per cent. Comby encountered rashes in 6 per cent., and Barthélemy in 7 per cent., of the cases observed. Hoffman noted, among 200 cases of influenza, 5 cases of an exanthem, 2 of which were very pronounced erythemas.

In other epidemics rashes have been less frequent; Hawkins found them in 1 per cent., and Guttman in 3 per cent., of the cases seen by him.

The erythematous eruptions appear usually during the early febrile period. In rare instances they may develop late, even after the subsidence of the fever. Finkler saw an intense scarlatiniform erythema, lasting five days, make its appearance after the cessation of pyrexia.

The milder erythemas are not followed by desquamation, but this may occur after the more persistent rashes.

**Erythema papulatum** has been observed by Hawkins, Moore, Bristowe, Béla, and Medvei, and *erythema multiforme* and *erythema nodosum* by R. Guiteras and Schwimmer.

**Urticaria**, usually of brief duration, has been mentioned by quite a number of writers.

**Herpes facialis** varies considerably in its incidence in different epidemics. Its frequency is mentioned by a number of writers as follows: Schulz and Demuth, in 25 per cent. of the cases; Krehl, in 12 per cent.; Bristowe and Petersen, each, in 10 per cent.; Stintzing, in 8 per cent.; Anton, in 6 per cent.; German Collective Investigation Committee, in 6 per cent.; Preston, in 5 per cent.; Leichtenstern, in 5 per cent. with pneumonia (105 cases), and in 3 per cent. of 334 uncomplicated cases.

**Herpes zoster**, occurring either as a complication or sequel of influenza, has been observed by Real, Dodler, Kollmann, Bilhaut, and Curtin and Watson; the last-named physicians met with 11 cases.

**Sudamina**, or *miliaria crystallina*, is, as one would expect in a disease frequently accompanied by sweating, not uncommon. Sweating in influenza may be severe; it has been known to persist for months after the termination of the disease.

Other cutaneous complications reported by various writers are erysipelas, furunculosis, purpura, simple and hemorrhagic pemphigus, and various forms of staphylococcia.

Among rarities may be mentioned the occurrence of alopecia areata (Rosenstein), vitiligo (Simson), and rapid graying of hair (Bossers and Bock).

## DENGUE

Dengue is an acute, epidemic, eruptive fever occurring chiefly in tropical and subtropical localities. The onset of the disease is sudden, with high fever, chill, severe pains in the frontal and orbital regions and in the joints, bones, and muscles. There are two febrile paroxysms with an intermission. The primary stage lasts about three days, and is followed by an abatement of symptoms for a period of two, three, or four days, when the second febrile paroxysm is ushered in.

**Eruption.**—A primary or premonitory erythema is sometimes observed at the beginning of the disease. This is of the nature of a vasomotor blush, and may appear either as a macular, patchy rash or as a diffuse redness. It may occur first upon the face, accompanied by puffiness of the skin, or upon the chest, abdomen, or knees. The rash is evanescent, lasting rarely longer than

The s

is far more constant

and important, and marks the development of the second stage of the disease. It appears upon the face, forearms, chest, and palms of the hands, but may become general. It is usually scarlatiniform in character, but not infrequently resembles measles or urticaria. The rash lasts from a few hours to two or three days, and is followed by desquamation, either branny or in flakes. With the fading of the rash a pronounced degree of itching may develop, the persistence of which may cause great distress during convalescence. The eruption, after disappearing, sometimes relapses.

The exanthem is regarded as a significant diagnostic symptom of dengue. It is not invariably present, but its frequency may be appreciated by the following figures: von Düring noted the presence of the rash in nine-tenths of his cases; de Brun and the Smyrna Medical Report record its absence only exceptionally; Charles and Martialis found it in two-thirds of their cases; on the other hand, Morgan observed the rash in only 11 per cent. of his patients.

**Herpes facialis** appears to be a rare occurrence in dengue.

Dengue may be readily confounded with influenza, and in some cases with scarlet fever and measles.

### MALARIA

There is no cutaneous manifestation that is either constant or peculiar to malaria.

**Herpes simplex** occurs commonly in the course of the disease, and is often of diagnostic importance, inasmuch as it is rare in typhoid fever, an affection with which malaria may, at the outset, be confounded. Griesinger observed herpes in 117 out of 390 cases of malaria. Kelsch and Kiener state that it occurred in one-third of the cases of "bilious gastric" malaria. Plehn, on the other hand, noted, among 744 cases of West African fever, only one case of herpes.

The eruption appears about the mouth and nose, occasionally on the tongue or gums, rarely elsewhere. It may develop during the hot or cold stage, but also at other periods. Arthur Powell regards the development of herpes as strong evidence of an early and favorable outcome of the disease.

**Erythema.**—But little reference is encountered in literature to the occurrence of erythematous rashes in the course of malaria. I recall the case of a young man sent into the scarlet-fever ward of the Municipal Hospital of Philadelphia with a

generalized *scarlatiniform erythema* of moderate intensity; this rash inaugurated the onset of a typical intermittent malaria. Marchiafava and Bignami speak of the occurrence of diffuse scarlatiniform rashes in the course of pernicious malarial fever. Morton, one of the earlier writers, described grave fevers *cum efflorescentia febrem scarlatinam simulante*. Bastianelli and Bignami refer to a case of malaria with a diffuse scarlatinoid rash covering the whole body, and with erythema of the fauces; desquamation occurred in large scales, when, on the third day thereafter, the rash recurred.<sup>1</sup>

A macular eruption or roseola appears to be extremely rare in the course of malaria. Such a case is reported by Segard. According to Obédenaire, Boicesco, and Moncorvo, a peculiar form of *erythema nodosum* occasionally occurs in malaria in children.

**Purpura.**—Punctiform hemorrhages may occur in the skin in hemorrhagic malaria. Bleeding from the mucous membranes is likewise seen in such attacks. Petechial spots are observed more particularly in children and in persons debilitated by previous illness.

**Urticaria** is said to occur in malaria about as frequently as herpes, although but little attention has been paid to this eruption in the literature of the subject.

**Pigmentation.**—The color of the skin is often pale yellow, greenish yellow, earth colored, or ashy gray, depending upon the coincidence of anemia and pigmentation. In chronic cases intense pigmentation may occur, the skin acquiring even a bronze or a chocolate tint. In some cases the integument is intensely yellow, from an associated jaundice. In malarial cachexia the skin is dry and may desquamate.

Gangrene of the skin, noma, acne, and furunculosis have occasionally been observed in the course of malaria.

#### EPIDEMIC CEREBROSPINAL MENINGITIS

The **petechial eruption** of cerebrospinal meningitis is a highly characteristic but inconstant manifestation of the disease. In the early epidemics, particularly in this country, the eruption was so prominent a symptom of the disease as

<sup>1</sup> Albert Billet, in 1892, described the case of a French soldier sent into the Constantine Military Hospital, supposed to be suffering from scarlet fever. The disease proved to be malaria, with a scarlatinoid erythema which subsequently recurred twice with the onset of paroxysms. Malarial organisms were found in the blood.



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adoption of the term "spotted fever," a name applied elsewhere to typhus fever. It is said that in the epidemic of 1806-07 almost every case was characterized by an eruption. In the epidemic of 1808-09, however, the characteristic rash was rarely encountered. In Ireland, in 1866-67, eruptions were frequently observed. Cerebrospinal meningitis in Germany seems to have been much less frequently accompanied by an exanthem than in America. Latterly, this disease in this country has exhibited the eruption in only a minority of the cases. Among 111 cases studied by Councilman and Mallory, hemorrhagic spots were observed in 11 patients. In general, it may be stated that the eruption of cerebrospinal meningitis occurs in about one-third or less of the cases.

The eruption appears ordinarily about the third day of the disease, although it may occur both earlier and later. I have seen a well-marked hemorrhagic rash develop within twelve hours of the onset of the malady. The eruption appears in the form of pin-head- to pea-sized, hemorrhagic, claret-colored or purplish spots which do not disappear under digital pressure. At times, finger-nail-sized or larger ecchymoses appear, which subsequently pass through the color gradations of effused blood. The eruption is scattered upon the trunk, face, and extremities. Ordinarily the number of spots is small, but exceptionally, a copious eruption may be present. In my experience profuse eruptions have occurred, more particularly in severe and fatal cases.

In rare instances a *macular rash* bearing some resemblance to the eruption of *measles* may make its appearance. North writes of cases presenting a rash resembling "flea-bites." Gordon encountered an eruption resembling measles, but the patches were irregular in size and shape. Gahlberg saw a case in which the eruption was very similar to measles. Austin Flint speaks of a rose-colored papular eruption looking like that of typhoid fever.

**Herpes Simplex.**—Herpes may be regarded as the most frequent cutaneous symptom of cerebrospinal fever, although it is not its most characteristic eruption. The herpetic vesicles appear most commonly about the nose and mouth, but are also seen at times upon the cheeks, ears, and neck. Occasionally, the outbreak is seen upon some portion of the extremities. I recall a patient on whom a patch of herpes was present upon

the last phalanx of the thumb. The herpetic clusters are at times extensive, but frequently are quite limited as regards the area covered. Herpes is of great diagnostic value in this disease, constituting one of the important early symptoms of the malady. Its frequency may be seen by reference to the following figures:

Tourdes noted herpes in 60 per cent. of his cases; Leyden, in 75 per cent; Friis (Copenhagen), 54 of 107 cases—50 per cent; Jaffe (Hamburg), 41 per cent; Councilmann *et al* (Boston), 35 of 111 cases—31 per cent; Leichtenstern, 26 of 29 cases—90 per cent.

The incidence of herpes varies in different epidemics, but in general it appears to be more common in cerebrospinal fever than in any other disease, save possibly pneumonia. Some writers regard the occurrence of herpes as of favorable prognostic significance, but such a view is scarcely borne out by experience.

Sudamina, urticaria, scarlatinoid erythema, and pemphigoid bullæ have been said to occur in rare instances.

### MILIARY FEVER

Miliary or sweating fever is a rare epidemic disease, largely confined to certain districts of France, Italy, Germany, and Austria. The disease does not appear to have been observed in America. The chief manifestations are profuse sweating, a peculiar eruption, and marked febrile and nervous symptoms. With or without prodromes, the patient exhibits, slowly or rapidly, extreme weakness, pronounced sweating, high fever, violent headache, epigastric constriction, dyspnea, delirium, etc.

**Eruption.**—About the third or fourth day, sometimes later, the rash appears, often preceded by prickling and formication. The exanthem may be of several varieties. The essential feature is an erythema, which may be morbilliform, resembling measles, or there may be a confluence of the rubeculous patches, producing a scarlatiniform rash. In some cases the eruption may take on a purpuric character.

Another eruptive variety (the one which has given the disease its name) consists of minute, closely aggregated, conical papules, which soon acquire miliary vesicles upon their summits. In some of the epidemics described this appears to have been the dominant eruption.

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ra present upon the trunk and extremities and at  
in the face. The mucous membrane of the mouth  
yau participate in the eruptive outbreak. After a duration  
seve the exanthem undergoes desquamation, which  
may be either furfuraceous or lamellar. Convalescence is  
vidious and uncertain. The mortality varies in different  
epidemics, averaging about 13 per cent.

## ANGINA AND TONSILLITIS

But little can be found in the medical literature bearing upon  
the occurrence of rashes in follicular tonsillitis and other forms  
of sore throat, yet eruptions are sometimes observed in associ-  
ation with these conditions.

The French author, G. H. Roger, remarks that a slight  
*erythema*, generally localized to the thorax and abdomen, is  
sometimes seen in the course of a simple catarrhal angina.  
Care, of course, must be exercised to distinguish such a condi-  
tion from a poorly developed scarlet fever.

In a boy eight years of age suffering from a sore throat with  
a thin grayish exudate over the tonsils I observed an extensive  
morbilliform eruption so closely resembling measles that such  
a diagnosis would have been entertained had it not been for  
the complete absence of catarrhal symptoms and the history  
of a former attack of measles. The eruption lasted scarcely  
more than twenty-four hours.

Von Lustwerk<sup>1</sup> reports a case of septic maculopapular  
erythema following follicular angina. At the termination of a  
follicular tonsillitis, a twenty-seven-year-old man developed a  
chill, followed by a symmetrically distributed eruption of  
bluish-red macules and papules appearing first on the extremi-  
ties and later on the body. The temperature rose to 104° F.,  
and persisted for nine days.

Dr. Rose Hirschler, of Philadelphia, informs me that she has  
on several occasions seen cases of follicular tonsillitis with  
patches of erythema, particularly over the articulations of the  
extremities.

It is somewhat surprising that toxic rashes have not been  
more often reported in connection with follicular tonsillitis,  
inasmuch as the streptococcus is a frequent cause of such  
eruptive phenomena.

<sup>1</sup> Russische Zeitschrift f. Haut- und Ven.-Krankheiten, Band XV,  
April, 1908.

## RHEUMATIC FEVER

There is no eruption constantly observed in rheumatic fever, nor any cutaneous manifestation peculiar to the disease.

**Herpes simplex** appears to be uncommon, having been observed by McCrae but 6 times in 270 cases in Osler's service in the Johns Hopkins Hospital. Most writers do not particularly mention its occurrence.

As would be expected in a disease accompanied by frequent sweats, **sudamina** are common, as is likewise **miliaria**, an inflammatory sweat eruption.

Forms of **erythema** are occasionally observed. McCrae found, in 270 cases of acute articular rheumatism, 8 instances of erythema.

As in other infectious processes, the erythema may present different forms.

The most common is a **polymorphous rash**, occurring as erythematous rings, which, through coalescence, produce large gyrate or map-like configurations occupying considerable areas of the trunk.

In other cases a papular erythema of the extremities may be seen. I recall a case of endocarditis and arthritis of a rheumatic nature following scarlet fever in which recurrent outbreaks of geographic erythema were observed.

At times a **scarlatiniform erythema** is encountered during a rheumatic attack. Poynton saw a general erythema of the scarlatiniform type, lacking, however, the punctiform character. Hallopeau and Roger have each recorded an instance of a scarlatiniform eruption in rheumatism.

**Urticaria** occurs rather rarely in this disease. In McCrae's series of 270 cases of rheumatism there were but two cases. Strümpell states that he has seen several cases of hemorrhagic urticaria, wheals appearing upon the skin and hemorrhages taking place into their centers and gradually spreading. The occasional occurrence of urticaria has been referred to by other writers.

**Erythema nodosum**, characterized by circumscribed, nut-sized, reddish, inflammatory swellings in the tibial regions, with subsequent bruise-like discolorations, has been frequently referred to as a rheumatic manifestation. Erythema nodosum does occur in rheumatic subjects, and at times during acute

attacks of rheumatism. Church observed this complication in 10 out of 1431 cases of rheumatic fever. It appears, however, during other infectious processes, and sometimes independently of any pronounced systemic disease. It is, moreover, closely related to, if not a variety of, erythema multiforme. I regard erythema nodosum as a toxic affection capable of being produced by various infections, of which the rheumatic is the most common.

**Purpura, or peliosis rheumatica**, also known as Schönlein's disease, is occasionally observed in the course of rheumatic fever, although not infrequently occurring independently thereof. The lesions consist of purplish-red patches or papules, primarily hemorrhagic or later becoming so. Its relation to the rheumatic process is doubtless much the same as that of erythema nodosum. The joint symptoms accompanying many of the members of the erythema group are not necessarily rheumatic in character, but due to various toxic causes. Among 1431 cases of rheumatic fever, Church found purpura present in 16 patients.

### SERUM ERUPTIONS

The injection into an individual of an alien or heterogeneous blood-serum, *i. e.*, a serum derived from an animal of another species, is often followed, after an interval of latency, by toxic phenomena, including the appearance of an eruption. It has been proved that the toxic manifestations are not due to the contained antitoxin, but in all probability to certain albuminous bodies in the serum. Therefore, the phenomena in question are observed after the use of antidiphtheric serum, antistreptococcic serum, antitetanic serum, antipneumococcic serum, etc. Diphtheria antitoxic serum, on account of its extensive use, commands especial interest and supplies us with the richest data. The use of antitoxic serum in diphtheria is followed, in a proportion of cases, by a train of phenomena the most conspicuous of which is the development of a cutaneous eruption.

The proportion of cases in which antitoxin rashes develop is most variable. Hartung has collected from the literature a series of 2661 injections, of which 294, or 11.4 per cent., developed rashes. The Imperial Board of Health of Germany reports 4358 cases of diphtheria injected with serum from January to July, 1895, with the production of 354 rashes, or 8.1 per cent. Among 78 cases of diphtheria treated in the

Scarlet Fever and Diphtheria Hospital of New York in 1901, rashes occurred in 25.4 per cent.

The Investigating Committee of the Clinical Society of London collected records of 663 cases; 220 of these, or 33.1 per cent., developed antitoxin rashes. Lennox Browne noted 38 eruptions in 100 cases. According to Berg, there occurred within four months in the Willard Parker Hospital, of New York, 82 rashes among 337 cases, or 24 per cent.

The great variability in the frequency with which antitoxin eruptions develop may be best appreciated when it is stated that Monti, of Vienna, observed rashes in 52 per cent. of one of his series of cases, whereas Hager did not observe a rash in a single instance among 61 cases. Serum from certain horses gives a much larger percentage of rashes than from others.

In the experience of Dr. William M. Welch and the author in the Municipal Hospital of Philadelphia an eruption appeared in about 20 per cent. of the patients injected.

**Date of Appearance of Eruption.**—The rash may appear in from one day to one month after the injection of the serum. The date of the appearance of the rash depends much upon the particular serum employed. Among 120 antitoxin eruptions observed in the Municipal Hospital, 49 per cent. appeared upon the sixth, seventh, and eighth days after the administration of the serum. They were observed as early as the second day and as late as the twentieth day. Several years previously the rashes quite uniformly appeared about the fourteenth day.

In the report of the Clinical Society of London the largest number of rashes appeared from the seventh to the twelfth day.

When scarlatiniform rashes develop, they are prone to appear early—often on the third or fourth day.

**Character of the Eruption.**—The vast majority of rashes are of an urticarial character, either made up of frank wheals or of an urticarial erythema. Next in frequency are the rashes belonging to the class of polymorphous erythema.

These may consist of irregular margined and non-elevated patches of redness, or may show a distinct tendency to annular or gyrate configuration. It is not uncommon to see an erythema made up of small, round, red patches with perfectly pale centers.

In other cases the erythema may be of the *scarlatinoid* type, and bear a close resemblance to the exanthem of scarlet fever.

The scarlatiniform rashes are prone to develop early—often from one to three days after the administration of the serum. In other cases the rash is a *morbilliform erythema*, looking not unlike the eruption of measles.

**Vesicular and bullous eruptions** are quite uncommon; I observed one well-pronounced case, which is shown in the



Fig. 235.—Antitoxin eruption after the use of diphtheria serum. Eruption is vesicular on face (rare) and erythematous and urticarial on body (Welch and Schamberg).

accompanying photograph. **Purpuric** antitoxin eruptions are very infrequent, for of many hundreds of rashes that have occurred in the Municipal Hospital, but three or four have been characterized by hemorrhage into the skin.

Antitoxin eruptions are frequently polymorphous, exhibiting wheals, patches of non-elevated erythema, and occasionally papules and vesicles. Mixed urticarial and erythematous lesions are frequently observed.

Indeed, all the lesions which may occur in erythema multiforme may be present in the rashes following serum injections. Most of the rashes are accompanied by *severe itching*; this is particularly complained of by adults, who are, perhaps, better able to give expression to their discomfort.

Edema of the skin is commonly noted in association with antitoxin rashes. The face is puffed, particularly about the eyelids, and not infrequently the penis, scrotum, and feet are edematous.

Among 220 rashes recorded by the Clinical Society of London, 161 were erythematous; 37 were urticarial; 17 were mixed; and 5 were petechial; 2 of the 5 petechial cases died. Of 33 rashes noted by Moizard, 14 were urticarial; 9 scarlatiniform erythema; 9 polymorphous erythema, and 1 purpura.

**Distribution.**—The distribution of the eruption is extremely irregular. It may occur upon any portion of the cutaneous surface. It is noted with particular frequency about the arms, legs, and buttocks, although the trunk is scarcely less commonly attacked. The face often escapes, but by no means always.

The most frequent region for the initial appearance of the rash is the site of the injection. It is quite common for an erythematous or urticarial eruption to appear about the cutaneous puncture and the surrounding skin within twenty-four hours after the injection; this frequently disappears, only to return some days later as the herald of the general eruption.

The eruption may consist of but a few scattered patches, or it may be so profuse as to involve the greater part of the cutaneous surface.

The eruption ordinarily persists for about forty-eight hours, although in some cases it may last three, four, or five days. The purpuric rashes continue much longer.

The eruption following the use of diphtheria antitoxin is occasionally subject to recurrence. The rash may disappear and return in a few days or several weeks afterward. Among 134 rashes observed in the Municipal Hospital of Philadelphia within a year and a half, there were 14 recurrent rashes. The earliest relapse occurred three days after the first eruption, and the latest, seventeen days.

**Constitutional Symptoms.**—Antitoxin rashes are commonly accompanied by constitutional disturbance of a more or less pronounced character. In the majority of cases there is elevation of temperature, with its usual concomitants. The



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It may at 101° or 102° F., but in rare cases may reach 104° F. The pyrexia ordinarily lasts from twenty-four to seventy-two hours, but may persist for a longer period. Headache and a variable amount of prostration may be present. A very common symptom is pain in the joints: adults often complain bitterly of the arthritic distress. Articular swelling is noted in some cases, but this subsides in a few days.

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